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ABSTRACT

This study was concerned with the relationship between (1) educational technology employed by a high school English department and the structure of that work group, and (2) the technological-structural congruence and teacher perceptions of organizational effectiveness. It was suggested that the research findings would be useful for inducing effective change in educational systems. The sample was comprised of English departments in thirty-seven North Carolina high schools offering grades ten through twelve and employing at least fifty teachers. Data were collected from each department with respect to technology, work group structure, and teacher perceptions of organizational effectiveness. Teacher perceptions of effectiveness were measured by means of the Organizational Climate Description Questionnaire (OCDQ), the Classroom Environment Scale (CES), and Job Description Index (JDI). Findings revealed a positive linear association between technological complexity and four measures of structure--departmental discretion, departmental power, lateral exchange, and vertical exchange. Additional findings, while inconclusive, revealed enough evidence of association between technological-structural congruence and teacher perceptions of effectiveness to warrant further investigation. Methodological limitations of the study are discussed, and suggestions for further study are offered. (Author/SC)

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FINAL REPORT

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EDUCATIONAL TECHNOLOGY, ORGANIZATIONAL STRUCTURE, AND TEACHER PERCEPTIONS OF EFFECTIVENESS

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University of North Carolina at Chapel Hill
February, 1975

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ABSTRACT

This study explored relations among educational technology, work group structure, and organizational outcomes in high schools. The basic theoretical framework was derived primarily from the work of Woodward (1965) and Perrow (1967, 1971). Briefly stated, the perspective advanced by these theorists proposes that the nature of technological demands confronting an organization determines the type of structure required to accommodate those demands. Moreover, organizations are successful to the extent that technological-structural consonance exists. The work of Perrow (1967, 1971) specifies relations between technological and structural characteristics from which the research questions of this study are derived.

Two major research questions were examined: (1) Are there relationships between the technology employed by a high school English department and the structure of that work group? (2) Is there a relationship between technological-structural congruence and teacher perceptions of organizational effectiveness?

The unit of analysis was the high school English department. The sample was comprised of departments in thirty-seven North Carolina high schools offering grades ten through twelve and employing at least fifty teachers.

Data were collected from each department with respect to three major constructs: (1) technology, (2) work group structure, and (3) teacher perceptions of organizational effectiveness. Teacher perceptions of effectiveness were measured by means of the Organizational Climate Description Questionnaire (OCDQ), the Classroom Environment Scale (CES), and Job Description Index (JDI).

With respect to the first question findings revealed a positive linear association between technological complexity and the measures of structure employed in the study: Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange. Although, findings did not provide a conclusive answer to the second question, sufficient evidence of association between congruence and teacher perceptions of effectiveness was revealed to warrant further investigation. Additionally, relationships were between dimensions of work-group structure and the measures of te teacher perception of effectiveness.

Methodological limitations of the study are discussed, and suggestions for further study are offered.

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I
THE PROBLEM

Purpose of the Study

This study explored the relationships among technology, structure, and organizational outcomes of high school English departments.

The study proceeded from a theoretical perspective that suggests: (1) the nature of appropriate structure is dependent upon the technology confronting the organization, and (2) the effectiveness of the organization is dependent upon technological-structural consonance, i.e., the appropriateness of structure to technology.

At the outset, the significance of the study was seen as deriving its implications for inducing effective change in educational systems. If relationships among technology, structure, and output could be specified, it was reasoned, a basis would be provided for incorporating structural design in educational change efforts, a dimension of planned change which has heretofore been notably neglected.

Theoretical and Empirical Background

Technology, in the perspective advanced by Perrow (1967; 1970), is considered to be the defining characteristic of an organization. As such it is treated as an independent variable, and structure--the social arrangements among members for task accomplishment--is viewed as a dependent variable (Perrow, 1967:194). In this view of organizational development, structure arises, by design or otherwise, in response to demands imposed by the nature of the technology. Perrow's perspective reflects an emergent view, notably stimulated by the work of Woodward (1965), of organizational structure as dependent upon a range of environmental and tech-

nological forces. As noted by Mohr (1971:444), this emergent view contrasts sharply with traditional thought and gives rise to questions regarding structural prescriptions advanced by diverse sources ranging from the early classical administration theorists to the more recent Human Relationists.

Numerous writers have considered, more or less directly, the relation between technology and structure. Among studies of general relevance to the question, Trist and Bamforth (1951) provided valuable insight to the interdependence of technical and social systems of an organization. Bennis (1959) related differences in leadership style to type of organization, suggesting by implication the dependence of one aspect of structure upon technology. In a study of two Scandinavian firms, Dill (1958) found administrative structures to be associated with different environmental relations, a condition which in turn may have been produced by different technologies.

Several well-known laboratory experiments in communication (Bavelas, 1950; Guetzkow and Simon, 1960; Leavitt, 1959) offer conclusions regarding interdependence of task and structure. More recently, Becker and Baloff (1969) examined directly the relative efficacy of three organizational patterns for laboratory groups engaged in the solution of a complex simulation problem.

Other writers have been directly concerned with the effects of technology upon structure. Litwak (1961) proposed the determinant feature of technology to be the degree of uniformity of events encountered by the organization. In subsequent studies, Hall (1962) and Hage and Aiken (1969) found relations between the uniformity, or routineness, of tasks and structural features of organizations.

Woodward (1965:40) grouped the organizations she studied along a scale of "technical complexity". In order of increasing complexity, three types of production systems were arranged along this scale: (1) unit and small batch (e.g., made-to-customer-order items); (2) large batch, assembly and mass-production systems; and (3) process production systems (e.g., oil, chemicals). Movement along the continuum from relative simplicity to complexity is accompanied by "an increasing ability to predict results and to control the physical limitations of production (1965:51)." Utilizing this means of technological classification in an analysis of organizational structure and effectiveness led Woodward to conclude that: (1) certain aspects of formal organizational structure (e.g., length of line of command, span of control) are related in a linear manner to technology (1965:51); (2) certain aspects of social structure (e.g., organic structure as contrasted with mechanistic structure) are related in a U-shaped curvelinear fashion to technology (1965:60-64); and (3) organizations are apparently more successful when their structure reflects the relationship to technology specified above (1965:69-71).

A series of related investigations known as the Aston Studies (Hickson et al., 1969; Pugh et al., 1969a, 1969b; Inkson et al., 1970) explored the effects upon organizational structure of a number of contextual variables, including technology. In addition to technology, such factors as organizational dependence upon superordinate agencies and the number of organizational sites within a total system were found to influence structure.

The preceding survey presents general support for the hypothesis that technology and structure are interdependent. The study reported here was concerned with testing this hypothesis and with examining the relationship proposed by Woodward between technological-structural congruence

and organizational effectiveness.

The Present Study

For purpose of this study, the concepts of technology and structure provided by Perrow (1967; 1970) were utilized. Two aspects of technology are identified as especially relevant to structure (Perrow, 1967: 195-196): (1) the number of exceptional cases encountered in the work; that is, the degree to which stimuli experienced by an operative are perceived as familiar or unfamiliar; and (2) the nature of the search process undertaken when exceptions occur. Search processes can be of two types. Where the problem is a familiar type, the search for a solution is logical and based upon established procedures. On the other hand, a problem may be so vague and poorly conceptualized as to preclude the application of logical search procedures. In this instance, the individual "draws upon the residue of unanalyzed experience or intuition or relies on chance and guess work" (Perrow, 1967:196). In the first instance, the search procedure is termed analyzable; in the latter it is termed unanalyzable.

These two dimensions of technology, exceptions and analyzability of search procedures, are derived in considerable measure from the nature of the raw material to be processed. Two raw material variables are defined (Perrow, 1967:196-197): (1) the informity of the raw material to be transformed and (2) the amount of knowledge about the raw material relevant to the transformation process. Uniform units of raw material present fewer exceptions, and knowledge permits greater control and predictability in transformation, or stated differently, a greater degree of analyzability in search procedures.

Technology so defined reflects a perception of the raw material tather than its actual nature:

> To understand the nature of the material means to be able to control it better and achieve more predictability in transformation. We are not referring here to the "essence" of the material, only to the way the organization itself perceives it (italics added) (Perrow, 1967:197).

Structure is likewise conceived as consisting of two dimensions: (1) the amount of control exerted by workgroup members over their task-related activities both at the general and specific levels; and (2) the manner of assuring coordination of task activities, both within the workgroup and among other sub-groups of the organization (Perrow, 1967: 197-198). These two characteristics, Perrow asserts, will vary in an organization depending upon the nature of the technology of the system. Where much is known about process and little variability in raw material must be accommodated, structure can be centralized; the nature of the work permits routinization and hierarchical control. By contrast, where variability of material and/or the absence of clearly understood procedures for processing that material preclude routinization, workgroup members must possess greater capacity to make and enact decisions regarding process. Moreover, where such control is located with the workgroup, coordination mechanisms are necessarily different from those in a centralized structure. There is a greater need for communication on the horizontal plane of the organization, both within the workgroup and between the workgroup and other sub-units involved in the production process. There is, additionally, a greater need for vertical information exchange, as contrasted with primarily downward communication of authority.

Variables of Technology Structure, and Output

Technology. In defining technology Perrow's raw material variable, uniformity of raw material, was selected as the general construct. Clearly, the objective degree of uniformity (of lack thereof) of raw material (pupils) does not vary substantially among schools serving similar populations. Indeed, it is a commonly professed belief among educators that individuals differ with respect to instructional needs. However, it seems reasonable to propose that the extent of formal recognition of variability may vary among similar organizations. The general construct, therefore, is reduced to institutional recognition of raw material variability. Moreover, institutional recognition is manifest in the implementation of formal means to accommodate variability. The presence of a variety of processes for pupils of varying needs increases in the technical complexity of the organization. The technological variable to be examined in this study is therefore presented as follows:

> Technical Complexity. The extent to which formal means for accommodating individual differences are available for use by faculty in an English department.

Structure. Two dimensions of departmental structure were examined: (1) task-relevant control, and (2) task-relevant communication.

With respect to control, two variables were identified:

1. Discretion. The amount of departmental control, as perceived by members, over operational activities.
2. Power. The amount of departmental control, as perceived by members over allocation of organizational resources.

With respect to communications, two variables were examined:

1. Lateral Exchange. The amount of task-related information exchange among members of the department.
2. Vertical Exchange. The amount of task-related information exchange between members of the department and school administrators.

Technological-Structural Consonance: As suggested by the theoretical basis of this study, organizational output is related to the extent to which organizational structures are appropriate to technological demands. Accordingly, one of the variables included in this investigation of variable relationships was a measure of technological-structural congruence. The operational definition of this variable will be provided in the succeeding section on procedures. A general definition is provided as follows:

Technological-Structural Consonance. The extent of congruence between Technical Complexity and the variables defining structure.

Effectiveness

As measures of teacher perceptions of effectiveness, three established instruments were employed. The variables of effectiveness are therefore defined by subscales of the following measures:

(1) The Organizational Climate Description Questionnaire (Halpin and Croft, 1962)

(2) The Classroom Environment Scale (Moos and Trickett, 1973)

(3) The Job Description Index (Smith et al., 1969)

Further description of these measures will be provided in the subsequent section on procedure.

Contextual Variables

Investigations by Pugh et al. (1969a, 1969b) indicated that, in addition to technology, various contextual features including size, dependence

on superordinate organizations, and number of sites within an organization influenced organizational structure. Accordingly, measures were obtained of the following contextual variables:

(1) Number of high schools in the school district
(2) Total enrollment of the school district
(3) Per pupil expenditure by district
(4) Percentage of per pupil expenditure provided by State funds
(5) Percentage of per pupil expenditure provided by Federal funds
(6) Percentage of per pupil expenditure provided by local funds
(7) Enrollment in the sample high school
(8) Percentage of sample high school enrollment represented by minority students
(9) Age of the sample high school

Personal Data

In addition, information was elicited from teachers with respect to:

1. Sex
2. Race
3. Age
4. Years experience in teaching
5. Years experience at present school
6. Highest academic degree earned
7. Number of semester hours beyond highest earned degree.

Predictions and Research Questions

Perrow's specification of relationships among structural elements of work groups (1967:197-198) provided a basis for predicting that the four structural variables employed in this study are interdependent in a positive linear manner. Additional support for the expectation that control and communication features are inter-related can be derived from various sources, including Simon (1957:306) and Barnard (1966:172-181). Consequently, the first research question to be addressed in this investigation was:

I. Are there relationships among the four structural variables of Discretion, Power, Lateral Exchange, and Vertical Exchange?

Further, Perrow (1967; 1970) proposes that structure is dependent upon the nature of technology confronting the organization. His formulations are based to a considerable extent upon the findings of Woodward (1955). A second research question, therefore was:

II. Are there relationships between Technical Complexity and the structural variables of Discretion, Power, Lateral Exchange, and Vertical Exchange?

Perrow (1967; 1970) and Woodward (1965) proposed that organizational effectiveness is related to the degree of congruence between organizational structure and technology. Accordingly, a third research question was as follows:

III. Is there a relationship between Technological-Structural Consonance and teacher perceptions of organizational effectiveness?

The findings of the Aston Group (Hickson et al., 1969; Pugh et al., 1969a, 1969b; Inkson et al., 1970) suggest contextual features in addition to technology that function to determine structure. A fourth research question, therefore, considered these relationships:

IV. Are the technological and structural variables of this study related to the contextual variables employed in this study?

II
PROCEDURES

Population and Sampling

The sample investigated in this study was comprised of English departments of thirty-seven North Carolina high schools. This number of units was derived by limiting the sample to high schools employing fifty or more teachers, high schools comprised of grades ten through twelve, and by selecting no more than one high school from a single school district. Where more than one high school meeting the two selection criteria existed within a school district, the school to be included in the study was randomly chosen from the schools in that district.

Utilizing these criteria, forty high schools comprising the initial sample were identified among public schools listed in the North Carolina Educational Directory, 1973-74. Permission to conduct this study was then sought from the superintendents of the forty school districts. Each superintendent was sent (1) a copy of a letter from the Associate Superintendent of the North Carolina State Department of Public Instruction endorsing the study, (2) an abstract of the study proposal, and (3) a letter from the investigator requesting that the Superintendent provide a list of names of the chairman and teachers who were assigned to the English Department of the designated high school.

Thirty-eight superintendents indicated their approval by providing the requested list of faculty members.

From the list provided by each superintendent, the chairman and four

randomly selected teachers were asked to respond to a battery of questionnaires comprised of (1) the Personal Data Questionnaire, (2) the Technical Complexity Scale, (3) the Communications Scale, (4) the Control Scale, (5) the Organizational Climate Description Questionnaire, (6) the Classroom Environment Scale, and (7) the Job Description Index (See Appendices A through G). All data were collected by mail.

It was considered to be necessary to obtain useable responses from at lease five members of each department. When the questionnaire battery was initially mailed, subjects were asked to return the completed questionnaires within a specified period. If a subject did not respond within a specified period after a follow-up postcard, an alternate subject was randomly chosen from the remaining members of the department.

Utilizing this procedure, useable responses were obtained from at least five members of thirty-seven of the thirty-eight departments.

Instrumentation

The Technical Complexity Scale

Devising the means of measuring organizational commitment to serving pupil variability required, first of all, specification of the variable to be examined. The term "technical complexity" was adopted and defined as follows:

> The extent to which formal means of accommodating individual differences are available for use by the faculty in a high school English department.

Defined in this manner, "technical complexity" refers to the formal, institutionalized practices intended to serve individual differences,

and the purpose of the "Technical Complexity Scale" is to distinguish among high school English departments on this formal, institutional basis.

A panel of nine prominent English educators were recruited to develop a list of indicators of "technical complexity." This procedure involved two steps: first, each panel member was given a statement of the variable to be defined and asked to comply with the following directions:

> The purpose of the Technical Complexity measure will be to distinguish among high school English departments on the basis of formal, institutionalized practices intended to accommodate individual differences. While the individual teacher, his attitudes, intellect, and skill are unquestionably critical to the effectiveness of instruction, the concern in this study is directed toward formal, organizationally sanctioned, practices implemented with the explicit purpose of providing for pupil variability.
>
> You are asked to list on the attached page a minimum of fifteen formal means such as practices, procedures, equipment and resources which you, as an expert in English education, would utilize as indicators of instutitional commitment to serving individual needs in the instructional program. It may be helpful to cast yourself in the role of a visitor to a high school. Ask yourself, "Aside from administrator and teacher expressions of concern for individual difference, what objective indicators, apparent to me in a relatively brief visit, would I rely upon to form a judgment regarding a school's official commitment to providing for individual pupil differences?
>
> The indicators that you select may be specific to instruction in English, but more probably will be practices applicable to a wide range of instructional programs. Examples of items of the latter type (which, if you shoose, you may include in your list) are: "flexible" or variable time schedules; a formal program of independent study; facilities for electronic information storage and retrieval; departmental resource centers.
>
> The items that you list should be concrete and specific. Avoid listing statements of attitude or philosophy. Entries may be written as phrases, sentences, or groups of sentences. Please state entries as succinctly as possible.

Upon the return of these initial lists prepared by the panel, a composite list was prepared. The composite list was derived (1) by discarding items which did not appear to be valid indicators of the variable as defined, and (2) by grouping statements around common meanings.

As the second step of the process, the composite list, comprised of twenty-eight indicators of "technical complexity" (See Appendix H) was returned to the panel with the following instructions:

1. From the enclosed list of indicators select the 20 items which, in your opinion, have the greatest potential for effectively individualizing instruction in English. List these 20 by number in the spaces provided below.

2. After you have listed the 20 items with the greatest potential for individualization, indicate their varying potential for individualizing instruction by distributing a total of 100 points among them. Place the number of points awarded to an item in the value column after the item number. Assign some value to each item. Do not exceed a total of 100 points for all the values assigned.

From these lists of twenty indicators, the final weighted list was determined in the following manner: The number of panel members selecting an item and the total number of points assigned was recorded for each of the twenty-eight items on the composite list. A weight for each item was derived by dividing the total number of points assigned to an item by nine, the total number of panel members. The results was then multiplied by 100 to remove the decimal point. The twenty items with the greatest weight were then selected for inclusion in the final list presented in Appendix I.

For scoring purposes, a five point scale (scored 0 through 4) was adopted. The respondent was asked to indicate the extent to which the characteristic represented by an item was present in his school by choosing among the following five alternatives:

1. Not present
2. Present to a slight extent
3. Present to a moderate extent
4. Present to a substantial extent
5. Present to a great extent

The score for an item is then derived by multiplying the weight of that item by the value of the chosen response (0 through 4). The total score for the questionnaire is obtained by summing the twenty item scores.

To reduce the magnitude of numbers employed in analysis, the total weighted scale was divided by 20.

The Communications Scale

The Communications Scale employed in this study was a slightly modified version of one developed earlier (Harkin, 1968). It consists of two groups of twenty-six items, each group measuring one of two dimensions of task-related communications behavior - lateral and vertical exchange.

Items for both parts of the instrument were constructed upon four task-relevant referents:

1. Content of instruction
2. Method of instruction
3. Resources for instruction
4. Competence in instruction

The behavior term, "exchange," was defined as occuring in formal or casual settings, in written or spoken form, between individuals or within groups. Five behaviors, identified as describing the modes of inter-

action available to individuals within an organization, were employed in the construction of items:

1. Teacher gives information to another member.
2. Teacher seeks information from another member.
3. Another member gives information to teacher.
4. Another member seeks information from teacher.
5. Teacher and another member discuss.

In the original development of the instrument, appropriate procedures were employed to establish validity and realiability (Harkin, 1968:33-444). Before employing the instrument in the present study, it was submitted for review to an acknowledged expert in measurement and evaluation. As a result of his review, a change in the manner of scaling and minor changes in the wording of some items were made. However, the twenty-six items comprising each sub-scale were essentially retained.

The following are sample items drawn from the instrument which is included in its entirety in the Appendix.

7.	Other teachers ask me for advice when they are selecting materials for instruction.	1 2 3 4
28.	Administrators ask me about ways to utilize the time, facilities, and personnel which are available for instruction.	1 2 3 4

Teachers indicated the frequency with which the behavior described occured by circling one of the numbers following each statement.

1: Never

2: Seldom
3: Occasionally
4: Frequently

For purpose of scoring, numerical values of one through four were assigned respectively to the responses 1 through 4. The subject's score on each sub-scale was his mean response on the items comprising that scale.

The Control Scale

Control was conceptualized as comprised of two dimentions: (1) Discretion, and (2) Power.

Discretion was defined as control over operational activities. Specifically, four referents were conceived as comprising the domain of discretion:

1. Content of instruction
2. Method of instruction
3. Materials of instruction
4. Evaluation of instruction

Decision categories were identified upon the basis provided by these four referents. These decision categories are presented in items 1 through 8 of the Control Scale presented in Appendix C.

Power was defined as control over organizational resources. Six referents were conceived as comprising this dimension of control:

1. Selection of personnel
2. Allocation of personnel
3. Allocation of fiscal resources
4. Allocation of physical resources
5. Allocation of time
6. Definition of instructional goals.

Decision categories were developed upon the bases provided by these six referents. These decision categories are represented in items 9 through 22 of the Control Scale presented in Appendix C.

For each decision category, the respondent was directed to indicate how control over that item was distributed within the school by apportioning a total of 10 points among three classes of decision-makers: (1) the

individual teacher, (2) the English department, and (3) the school administrative staff.

For the purpose of this study, only the departmental scores for Discretion and Power were of immediate interest. The score for Departmental Discretion was derived by multiplying by 10 the subject's average assignment of Departmental control in items 1 through 8. The score for Departmental Power was established by applying the same procedure to the subject's responses to items 9 through 22.

Technological-Structural Consonance

Five Technological-Structural Consonance variables were defined:

1. Technology-Lateral Exchange Consonance (TLE)
2. Technology-Vertical Exchange Consonance (TVE)
3. Technology-Departmental Discretion Consonance (TDD)
4. Technology-Departmental Power Consonance (TDP)
5. Technology-Total Structural Consonance (TCo)

The first four of these variables were defined as the difference between the individual department's standard score on Technical Complexity and, respectively, that department's standard score Lateral Exchange, Vertical Exchange, Departmental Discretion, and Departmental Power. The fifth, Technology-Total Structural Consonance, was the department's total of differences between the standard score for Technical Complexity and the standard scores for the four structural variables.

The scores derived in this fashion could perhaps be more appropriately termed measures of technological-structural disparity rather than consonance since the magnitude of the score increases with the difference between standard scores for Technical Complexity and the measures of structure.

The Organizational Climate Description Questionnaire (OCDQ)

The Organizational Climate Description Questionnaire (OCDQ) was selected as a measure of teacher satisfaction of social and task-accomplishment needs (Halpin and Croft,(1962:80). Comprised of sixty-four Likert-type items, the instrument provides measures of the follcwing eight dimensions of organizational climate (Halpin and Croft, 1962: 4):

Disengagement (Dis) refers to the teachers' tendency to be "not with it." This dimension describes a group that is "going through the motions," a group that is "not in gear" with respect to the task at hand.

Hindrance (Hin) refers to the teachers' feeling that the principal burdens them with routine duties, committee demands, and other requirements which the teachers construe as unnecessary busy-work. The teachers perceive that the principal is hindering rather than facilitating their work.

Esprit (ESP) refers to "morale". The teachers feel that their social needs are being satisfied, and that they are, at the same time, enjoying a sense of accomplishment in their job.

Intimacy (Int) refers to the teachers' enjoyment of friendly social relations with each other. This dimension describes the social-needs satisfaction that is not necessarily associated with task-accomplishment.

Aloofness (Alo) refers to the behavior by the principal which is characterized as formal and impersonal. He "goes by the book" and prefers to be guided by rules and policies rather than to deal with teachers in an informal, face to face situation. His behavior, in brief, is universalistic rather than particularistic; nomothetic rather than idiosyncratic. To maintain this style, he keeps himself - at least, "emotionally" - at a distance from his staff.

Production Emphasis (PEm) refers to behavior by the principal which is characterized by close supervision of the staff. He is highly directive, and plays the role of a "straw boss". His communication tends to go in only one direction, and he is not sensitive to feedback from the staff.

Thrust (Thr) refers to behavior by the principal which is characterized by his evident effort in trying to "move the organization". "Thrust" behavior is marked not by close supervision, but by the principal's attempt to motivate the teachers through the example which he personally sets. Apparently, because he does not ask

> the teachers to give any more of themselves than he willingly gives of himself. His behavior, though starkly task-oriented, is nevertheless viewed favorably by the teachers.
>
> Consideration (Con) refers to behavior by the principal which is characterized by an inclination to treat teachers "humanely," to try to do a little something extra for them in human terms.

On the basis of the relative prominence of these eight dimensions, Halpin and Croft specified the organizational climate of seventy-one schools, ranging them on a continuum from "open" to "closed". Generally speaking, seven of the eight subtests can be divided into two groups. The first group, comprised of Disengagement, Hindrance, Aloofness, and Production Emphasis, characterises "closedness," or the absence of satisfaction of social and task-accomplishment needs. The second group, consisting of Esprit, Thrust and Consideration, indicate "openness," or task-needs integration (Halpin and Croft, 1962: 4). Of these three subtests, Esprit was found to be the "key" subtest for describing a school's organizational climate, and high scores on that dimension were interpreted to reflect integration of task-accomplishment and social needs satisfaction (Halpin and Croft, 1962: 80).

The description of the "open" and "closed" poles of the climate continuum, provided by Halpin and Croft, serves as a basis for the interpretation in this study of the subtest scores manifest by English departments:

> The profile for the Open Climate scores high on the subtests of Esprit and Thrust, and low on Disengagement. These scores describe an energetic, lively organization which is moving toward its goals, but which is also providing satisfaction for the individual's social needs... Contrariwise, the Closed Climate is marked by low score on Esprit and Thrust, and by a high score on Disengagement. There seems to be "nothing going on" in this organization. Although some attempts are being made to move the organization, they are met with apathy ...in short, "morale" is low, and the organization seems to be stagnant.[1]

In the present study, no effort was made to establish the climate of English departments within the open-closed continuum provided by Halpin and Croft. Rather, analysis utilized the departmental mean score for the eight sub-tests of the instrument. Standardized departmental scores were obtained through procedures established by the authors of the instrument.

The Classroom Environment Scale (CES)

The Classroom Environment Scale (CES) was selected as a measure of the social climate of the high school classroom :

> It focuses on the measurement and description of teacher-student and student-student relationships and on the type of organizational structure of the class. The rationale used for the development of the CES was basically derived from the theoretical contributions of Henry Murray (1938) and his conceptualization of environmental press. The logic of our approach is that the consensus of individuals characterizing their environment constitutes a measure of environmental climate and that this environmental climate exerts a directional influence on behavior (Moos and Trickett, 1973: 1).

Comprised of 90 items requiring "True-False" responses, Form D of the CES provides measures of the following nine submeasures of classroom environment (Moos and Trickett, 1973: 1):

> Involvement (Inv) measures the extent to which students have interest in class activities and participate in discussions. The extent to which students do additional work on their own and enjoy the class is considered.
>
> Affiliation (Aff) assesses the level of friendship students feel for each other, i.e., the extent to which they help each other with homework, get to know each other easily, and enjoy working together.
>
> Teacher Support (TSu) measures the amount of help, concern, and friendship the teacher directs towards the students. The extent to which the teacher talks openly with students, trusts them, and is interested in their ideas is considered.
>
> Task Orientation (TOr) measures the extent to which it is important to complete the activities which have been planned. The emphasis the teacher places on staying on the subject matter is assessed.

Competition (Com) assesses the emphasis placed on students competing with each other for grades and recognition. An assessment of the difficulty of achieving good grades is included.

Order and Organization (OOr) assesses the emphasis on students behaving in an orderly and polite manner and on the overall organization of assignments and classroom activities. The degree to which students tend to remain calm and quiet is considered.

Rule Clarity (RCl) assesses the emphasis on establishing and following a clear set of rules, and on students knowing what the consequences will be if they do not follow them. An important focus of this subscale is the extent to which the teacher is consistent in dealing with students who break rules.

Teacher Control (TCl) measures how strict the teacher is in enforcing the rules, and the severity of the punishment for rule infractions. The number of rules and the ease of students getting in trouble is considered.

Innovation (Inn) measures how much students contribute to planning classroom activities, and the amount of unusual and varying activities and assignments planned by the teacher. The extent to which the teacher attempts to use new techniques and encourages creative thinking in the students is considered.

These nine subscales are conceptualized as contributing to the assessment of three basic dimensions of classroom environment:

...The ordering of these subscales reflects a conceptualization of the relationships among them. The Involvement, Affiliation, and Teacher Support subscales are conceptualized as measuring relationship dimensions. These three dimensions assess the extent to which students tend to become involved in the classroom, the extent to which the teacher supports students and students tend to support and help each other and the extent to which there is a feeling of friendship and loyalty in the classroom. Thus, these three dimensions essentially assess the types and intensity of personal relationships among students and between the students and the teacher which exist in the classroom.

The nest two subscales, i.e., Task Orientation and Competition, are conceptualized as assessing personal development or goal deorientation dimensions. These dimensions assess the extent of emphasis on two important cimensions differentiating among classrooms.

The next three subscales of Order and Organization, Rule Clarity, and Teacher Control are conceptualized as assessing system maintenance dimensions. These subscales are system-oriented in that they assess dimensions relating to the goal of keeping the classroom functioning in an orderly, organized,

> clear and coherent manner. Finally the last subscale, Innovation, assesses the degree of emphasis on system change, i.e., the extent to which there is variety, novelty, and reasonable variation in the classroom milieu. Thus the CES assesses dimensions which are relevant to the dual role responsibility of the teacher of maintaining conditions in which a group of students can learn, and of providing effective support for such learning. In addition student-student relationships are systematically assessed by the subscale dimensions (Moos and Trickett, 1973: 3).

For purposes of this study, Form D (Real Classroom) was administered to the teachers comprising the sample. The teacher was directed to identify the class to which he was responding in the following manner:

> ...Think about the English class with which you are meeting at ten o'clock next Wednesday morning. If you do not have an English class at that time, think about the very next class following that time. With that class in mind, please respond to the statements below...

The ninety items comprising Form D are divided among the nine subscales and each item is coded as "true" (+) or "false" (-) (See Appendix J). In scoring, an item listed as "true" (+) is scored one point if marked "true" by the respondent, and an item listed as "false" (-) is scored one point if marked "false". The total subscale score is the number of items answered in the coded direction.

The Job Description Index (JDI)

The JDI is comprised of five subscales, each of which measures satisfaction with one aspect of a job: the work itself, pay, opportunities for promotions, supervision, and co-workers (Smith et al., 1969: 69). Since the conditions of pay and promotional opportunities were judged to be similar among all units of the sample, only the three subscales concerned with work, supervision, and co-workers were employed in this study.

Each subscale is comprised of a list of adjectives and short phrases.

The respondent was asked to indicate whether an adjective or phrase is descriptive of the particular facet of his job under consideration (e.g., co-workers) by circling one of the numbers after the item:

1. This item describes a particular aspect of my job.
2. This item does not describe a particular aspect of my job.
3. Undecided.

This manner of scaling represents a modification of the procedure specified by the authors of the JDI (Smith et al., 1969: 83), and was employed in order to facilitate data card preparation. The meaning of the responses called for in this modified procedure was judged to be identical to the meaning of responses obtained by the procedure suggested by the authors.

Each item on a subscale is coded in the "satisfied" direction for that scale (See Appendix K). In scoring, the following numerical values were assigned to responses (Smith et al., 1969: 79):

Positive items judged "descriptive"	3
Negative items judged "not descriptive"	3
Undecided	1
Positive items judged "not descriptive"	0
Negative items judged "descriptive"	0

The subscale score for each respondent was then decided by summing the numerical values thus determined for that subscale.

Data Collection

All questionnaire data were collected by mail during March and April of 1974. As indicated earlier, a minimum of five useable sets of responses were obtained from each department in the sample.

Contextual data were obtained from two sources provided by the North

Carolina State Department of Public Instruction:

1. Current Expense, Disbursement by Source of Funds, 1972-73.
2. Elementary and Secondary School Civil Rights Survey, October, 1973

Data Analysis

Following the statement of each major research question is a description of the analytic procedures employed:

I. Are there relationships among the four structural variables of Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange?

Statistical Procedure: Product-moment correlation

Data Used: Departmental mean scores on four structural variables: Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange.

II. Are there relationships among Technical Complexity and Structural variables of Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange?

Statistical Procedure: Step-wise multiple regression

Data Used: Independent variable - Technical Complexity; Dependent variables - Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange.

III. Is there a relationship between Technological-Structural Consonance and teacher perceptions of effectiveness?

Statistical Procedure: Step-wise multiple regression

Data Used: Independent variables - five measures of Technological-Structural Consonance.

Dependent variables-departmental mean scores on subscales of OCDQ, CES, and JDI.

Investigation of this question required fifteen analyses: each employing one of the five measures of Technological-Structural Consonance as the independent variable with one of the three sets of subscales provided by the OCDQ, CES, and JDI.

IV. Are the technological and structural variables of this study related to the contextual variables employed in this study?

Statistical Procedure: Step-wise multiple regression.

Data Used: Independent variables-departmental mean scores for Technical Complexity; and departmental mean scores for four structural variables.

Dependent variables - contextual variables of (1) number of high schools in district; (2) total enrollment of school district; (3) per pupil expenditure by district; (4) percentage of per pupil expenditure provided by state funds; (5) percentage of per pupil expenditure provided by Federal funds; (6) percentage of per pupil expenditure provided by local funds; (7) enrollment in the sample high school; (8) percentage of sample hightschool enrollment represented by minority students; (9) age of sample high school.

Investigation of this question required two separate analyses, one employing each of the two independent variables listed above with the set of nine contextual variables.

In addition to investigation of the four major research questions, the relationships between Technical Complexity and teacher perception of

effectiveness and the relationships between the four structural variables and teacher perceptions of effectiveness were explored by means of stepwise multiple regression analyses.

III
FINDINGS

Research Question I

Are there relationships among the four structural variables of Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange?

Means and standard deviations for Technical Complexity and structural variables are presented in Table 1.

Table 2 displays the correlation matrix for the four structural variables. Among the correlations presented, only the relationship between Vertical Exchange and Lateral Exchange ($P < .01$) is statistically significant.

TABLE 1

MEANS AND STANDARD DEVIATIONS:
TECHNICAL COMPLEXITY AND FOUR VARIABLES OF
ORGANIZATIONAL STRUCTURE

Variable	Mean	Standard Deviation
Technical Complexity	731.501	187.251
Lateral Exchange	2.892	.200
Vertical Exchange	2.169	.278
Departmental Discretion	32.600	7.827
Departmental Power	14.862	5.209

Note: Technical Complexity score was derived by dividing total weight score by 20.

TABLE 2

CORRELATIONS AMONG TECHNICAL COMPLEXITY
AND FOUR STRUCTURAL VARIABLES

	(N = 37) TC	LE	VE	DD	DP
Technical Complexity	1.000	.384	.448	.247	.371
Lateral Exchange		1.000	.643	.089	-.055
Vertical Exchange			1.000	.070	.141
Departmental Discretion				1.000	.151
Departmental Power					1.000

$r \geq .27$, $p < .05$

$r \geq .38$, $p \leq .01$

Research Question II

Are there relationships between Technical Complexity and the structural variables of Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange?

Table 2 also displays correlations among these five variables. Of the four structural variables, Lateral Exchange, Vertical Exchange, and Departmental Power are shown to be associated with Technical Complexity at statistically significant levels. The fourth, Departmental Discretion, is associated at a level approaching statistical significance.

Step-wise multiple regression analysis was employed to determine the strength of association between Technical Complexity and the set of four structural variables. As would be expected, given the strength of univariate associations, multivariate analysis produced a statistically significant multiple correlation. Table 3 indicates, however, that the major part of shared variance can be accounted for by two structural variables: Vertical Exchange and Departmental Power. The instruction

of Lateral Exchange increased the multiple correlation to .577 and exerted a suppressing effect upon the contribution of Vertical Exchange, while the introduction of Departmental Discretion increased the multiple correlation to .598. The F statistic for this final correlation was 4.458 (df, 4,32) which is significant at the .01 level.

TABLE 3

STEP-WISE MULTIPLE REGRESSION:
TECHNICAL COMPLEXITY AND STRUCTURAL VARIABLES

(N = 37)

Multiple Correlation Coefficient:	0.545
F statistic, df (2,34)	7.206
P <.01	

Variable	F,df (1,34)	P
Vertical Exchange	7.743	.01
Departmental Power	4.680	.05

Research Question III:

Is there a relationship between Technological-Structural Consonance and teacher perceptions of effectiveness?

To explore this question, multiple regression analysis was utilized to determine the association between each of the five consonance variables and each of the three sets of effectiveness measures.

TABLE 4

MEANS AND STANDARD DEVIATIONS: VARIABLES OF TECHNOLOGICAL-STRUCTURAL CONSONANCE

Variable	Mean	Standard Deviation
Technology-Lateral Exchange Consonance	.884	.270
Technology-Vertical Exchange Consonance	.931	.358
Technology-Departmental Discretion Consonance	.983	.341
Technology-Departmental Power Consonance	.903	.459
Total Consonance	3.701	.861

Means and standard deviations for the five consonance measures are presented in Table 4.

Means and standard deviations for the measures of organizational climate, classroom environment, and job satisfaction are displayed in Table 5.

TABLE 5

MEANS AND STANDARD DEVIATIONS: VARIABLES OF ORGANIZATIONAL CLIMATE, CLASSROOM ENVIRONMENT, AND JOB SATISFACTION

Variable	Mean	Standard Deviation
Organizational Climate		
Disengagement	53.689	5.077
Hindrance	53.925	4.276
Esprit	43.286	4.279
Intimacy	47.178	3.868
Aloffness	47.336	3.676
Production Emphasis	53.938	3.913
Thrust	46.323	4.771
Consideration	50.289	4.266
Classroom Environment		
Involvement	8.547	.865
Affiliation	7.964	.836
Teacher Support	8.965	.562
Task Orientation	7.410	.829
Competition	7.098	.675
Order and Organization	8.152	.704
Rule Clarity	8.426	.854
Teacher Control	3.840	.746
Innovation	7.369	.967
Job Satisfaction		
With Work	36.622	3.640
With Supervision	39.662	6.644
With Co-workers	40.508	6.142

Note: OCDQ subtests are normally standardized according to procedures established by the authors of the instrument; Mean = 50 and Standard Deviation = 10 for the normative base.

Consonance and Organizational Climate

Table 6 presents the correlations among the five consonance measures and the eight subscales of the OCDQ. Few statistically significant relationships are revealed: Technology-Vertical Exchange is associated with Disengagement; Technology-Department Power is negatively related to Consideration; and Total Consonance is related to Disengagement and Consideration. In addition, a number of relationships which approach statistical significance are indicated. In interpreting these relationships, it should again be noted that the consonance scores are actually measures of disparity between standard scores of Technical Complexity and the structural variables; thus, a negative relationship between, for example, Total Consonance and Consideration can be interpreted to mean [illegible] as disparity between technology and structure increases, the teacher's perception of the principal's consideration diminishes, or, stated differently, as technology and structure approach congruence, the perception of consideration increases.

Step-wise multiple regression analysis of the relation between each of the consonance measures and the set of OCDQ variables provided the following results:

TLE and OCDQ

No significant multivariate association was found between Technology-Lateral Exchange Consonance and the set of OCDQ subscales.

TVE and OCDQ

Step-wise multiple regression revealed a multiple correlation of .667 ($p < .05$) between Technology-Vertical Exchange Consonance and the set of

TABLE 5

CORRELATIONS AMONG VARIABLES OF TECHNOLOGICAL-STRUCTURAL CONSONANCE AND ORGANIZATIONAL CLIMATE

(N = 37)

	TLE	TVE	TDD	TPD	TCo	Dis	Hin	Esp	Int	Alo	PEm	Thr	Con
TLE	1.00	.23	.25	.18	.60	-.01	-.14	.02	.11	.20	-.06	-.02	-.07
TVE		1.00	.10	.07	.57	.34	-.04	.05	.17	-.09	-.17	-.09	-.21
TDD			1.00	.10	.57	.26	-.09	-.24	.10	-.09	-.11	.10	-.02
TDP				1.00	.66	.06	-.04	.07	.08	.17	.24	-.05	-.35
TCo					1.00	.29	-.11	.03	.10	.08	-.01	-.01	-.30
Dis						1.00	.17	-.65	-.06	.04	-.05	-.29	-.29
Hin							1.00	.10	-.11	-.03	.10	-.56	-.40
Esp								1.00	-.25	.05	-.08	.06	.02
Int									1.00	-.06	-.13	-.23	-.06
Alo										1.00	.05	-.37	-.48
PEm											1.00	-.31	-.43
Thr												1.00	.53
Con													1.00

$r \geq .27$, $p \leq .05$
$r \geq .38$, $p \leq .01$

Consonance Variables:

TLE : Technology-Lateral Exchange
TVE : Technology-Vertical Exchange
TDD : Technology-Departmental Discretion
TDP : Technology-Departmental Power

Climate Variables:

Dis : Disengagement
Hin : Hindrance
Esp : Esprit
Int : Intimacy
Alo : Aloffness
PEm : Production Emphasis
Thr : Thrust
Con : Consideration

eight OCDQ variables. As indicated in Table 7, however, the major portion of the shared variance could be accounted for by four OCDQ variables. Of the four, only Disengagement had been shown by univariate statistics to be associated with TVE.

TABLE 7

STEP-WISE MULTIPLE REGRESSION:
TECHNOLOGY-VERTICAL EXCHANGE
CONSONANCE AND ORGANIZATIONAL CLIMATE

(N = 37)

Multiple Correlation Coefficient:	.634
F statistic, df (4,32)	5.364
p < .01	

Variable	F,df (1,32)	P
Disengagement	19.189	.01
Esprit	13.354	.01
Intimacy	8.474	.01
Thrust	2.166	n.s.

TDD and OCDQ

Multiple regression analysis revealed no significant association between Technology-Departmental Discretion Consonance and the set of Organizational Climate variables.

TDP and OCDQ

Beyond the significant relationship with Consideration indicated in Table 6, multivariate analyses revealed no association between Technology-Departmental Power Consonance and the set of Organizational Climate variables.

TCo and OCDQ

Table 6 shows Total Consonance to be associated significantly with Disengagement and Consideration. Multiple regression analysis revealed no significant multivariate association between Total Consonance and the set of Organizational Climate variables.

Consonance and Classroom Environment

Table 8 presents correlations among the variables of consonance and the Classroom Environment Scale. Again, few statistically significant associations are found between consonance variables and the criterion measures: Technology-Lateral Exchange Consonance is found to be negatively associated with Teacher Control at a significant level; Technology-Vertical Exchange Consonance is significantly and negatively associated with Involvement, Affiliation, and Teacher Control; Technology-Departmental Discretion Consonance is negatively and significantly associated with Involvement; and Total Consonance is shown to be negatively related to Involvement and Teacher Control at significant levels. Additionally, each consonance variable associated with one or more CES variables at levels approaching significance. It should again be noted that the consonance measures are actually measures of difference between standard scores for Technical Complexity and the structural measures.

Step-wise multiple regression analysis of the relationship between each of the consonance variables and the set of Classroom Environment Measures produced the following results:

TLE and Classroom Environment

No significant multivariate assocation was found between Technology-Lateral Exchange Consonance and Classroom Environment.

TABLE 8

CORRELATIONS AMONG VARIABLES OF TECHNOLOGICAL-STRUCTURAL CONSONANCE AND CLASSROOM ENVIRONMENT

(N = 37)

	TLE	TVE	TDD	TDP	TCo	Inv	Aff	TSu	TOr	Com	OOr	RCl	TCl	Inn
TLE	1.00	.23	.25	.18	.60	-.17	-.07	-.03	-.25	-.02	-.10	.21	-.27	-.17
TVE		1.00	.10	.07	.57	-.28	-.27	-.09	-.07	-.05	.01	-.11	-.29	-.07
TDD			1.00	.10	.57	-.58	-.10	-.16	-.02	-.20	.01	.14	.06	.06
TDP				1.00	.66	.12	-.07	.09	-.01	-.10	-.03	-.05	-.26	.16
TCo					1.00	-.46	-.21	-.07	-.12	-.15	-.04	.05	-.32	.03
Inv						1.00	.32	.26	.02	.20	.21	.18	-.06	.13
Aff							1.00	.30	.00	.22	.03	-.03	.02	.38
TSu								1.00	-.22	-.26	-.16	-.34	-.39	.27
TOr									1.00	.19	.56	.20	.49	-.29
Com										1.00	.35	.24	.26	.06
OOr											1.00	.29	.34	-.31
RCl												1.00	.40	-.23
TCl													1.00	-.21
Inn														1.00

$r \geq .27$, $p \leq .05$
$r \geq .38$, $p \leq .01$

Consonance Variables

TLE : Technology-Lateral Exchange
TVE : Technology-Vertical Exchange
TDD : Technology-Departmental Discretion
TDP : Technology-Departmental Power
TCo : Total Consonance

Inv : Involvement
Aff : Affiliation
TSu : Teacher Support
TOr : Task Orientation
Com : Competition
OOr : Order and Organization
RCl : Rule Clarity
TCl : Teacher Control
Inn : Innovation

36.

TVE and Classroom Environment

Multiple regression analysis revealed a two variable set comprised of Involvement and Teacher Control to be related significantly to Technology-Vertical Exchange Consonance. As shown in Table 9, the individual F values for the two CES variables indicate that, while neither is independently related to TVE at a significant level, the set is significantly associated with the consonance measure.

TABLE 9

STEP-WISE MULTIPLE REGRESSION: TECHNOLOGY-VERTICAL EXCHANGE CONSONANCE AND CLASSROOM ENVIRONMENT

(N = 37)

Multiple Correlation Coefficient:	.412
F statistic, df (2,34)	3.478
p < .05	

Variable	F, df(1,34)	P
Involvement	3.55	n.s.
Teacher Control	3.84	n.s.

TDD and Classroom Environment

Step-Wise multiple regression analysis revealed a multiple correlations of .721 ($p < .01$) between Technology-Departmental Discretion and the entire set of nine CES variables. However, as indicated in Table 10, the major portion of shared variance was accounted for by the first five variables entered in the equation: Involvement, Rule Clarity, Innovation, Competition, and Order and Organization. Although the F values associated with the latter two in Table 10 are non-significant, they are included in the set because of the effect of their entry upon the significance of the total set. Of these four variables, only Involve-

ment was shown in Table 8 to be related significantly to Technology-Departmental Discretion Consonance.

TABLE 10

STEP-WISE MULTIPLE REGRESSION: TECHNOLOGY-DEPARTMENTAL DISCRETION CONSONANCE AND CLASSROOM ENVIRONMENT

	(N = 37)	
Multiple Correlation Coefficient:		.712
F statistic, df (5,31)		6.377
p < .01		
Variable	F,df(1,31)	P
Involvement	25.557	.01
Rule Clarity	5.5201	.05
Innovation	4.676	.05
Competition	2.961	n.s.
Order and Organization	2.357	n.s.

TDP and Classroom Environment

Multiple regression analysis revealed no significant association between Technology-Departmental Power Consonance and the set of nine Classroom Environmental variables.

TCo and Classroom Environment

A multiple correlation of .69 ($p < .01$) was found between Total Consonance and a set of seven of the nine CES measures: Involvement, Affiliation, Competition, Order and Organization, Rule Clarity, Teacher Control, and Innovation. However, the set of four variables listed in Table 11 accounted for most of the common variance. While the F value of the last of these four entered, Order and Organization, is non-significant, it is

included in the set because it increased the F values of the two primary contributors as well as the strength of the multivariate correlation. Of this set of four, Involvement and Teacher Control, the two primary contributors, were shown by the correlations presented in Table 6 to be significantly associated with Total Consonance.

TABLE 11

STEP-WISE MULTIPLE REGRESSION: TOTAL CONSONANCE AND CLASSROOM ENVIRONMENT

(N = 37)		
Multiple Correlation Coefficient:		.673
F statistic, df (4,32)		6.624
$p < .01$		
Variable	F,df(1,32)	P
Involvement	18.453	.01
Teacher Control	12.818	.01
Rule Clarity	4.741	.05
Order and Organization	1.389	n.s.

Consonance and Job Satisfaction

Table 12 presents the correlations among variables of technological structural consonance and job satisfaction as measured by the Job Description Index. Two significant correlations are revealed: Technology-Lateral Exchange Consonance is negatively associated with Satisfaction with work, and Total Consonance is likewise associated with that dimension of satisfaction. Again, in interpreting those associations, it should be noted that the consonance measures are actually measures of disparity between technology and structure.

TABLE 12

CORRELATIONS AMONG VARIABLES OF TECHNOLOGICAL-STRUCTURAL CONSONANCE AND JOB SATISFACTION

(N = 37)

	TLE	TVE	TDD	TDP	TCo	Wrk	Sup	CWo
TLE	1.00	.23	.25	.18	.60	-.28	.12	.11
TVE		1.00	.10	.07	.57	-.14	-.20	-.05
TDD			1.00	.10	.57	-.01	-.04	-.07
TDP				1.00	.66	-.23	-.14	.10
TCo					1.00	-.27	-.14	.04
Wrk						1.00	.38	.37
Sup							1.00	.33
CWo								1.00

$r \geq .27$, $p < .05$
$r \geq .38$, $p \leq .01$

Consonance Variables:

TLE : Technology-Lateral Exchange
TVE : Technology-Vertical Exchange
TDD : Technology-Departmental Discretion
TDP : Technology-Departmental Power
TCo : Total Consonance

Satisfaction Variables

Wrk : With Work
Sup : With Supervision
CWo : With Co-workers

As might be predicted from the findings presented in Table 12, multiple regression analysis revealed no significant associations between any of the variables of technological-structural consonance and the set of job satisfaction measures.

Research Question IV:

Are the technological and structural variables employed in this study related to the contextual variables employed in this study?

Means and standard deviations for the contextual variables are displayed in Table 13.

Correlations presented in Table 14 show no statistically significant associations between Technical Complexity and the nine selected contextual variables although the correlation between Technical Complexity and Age of School (-.26) approach significance. With respect to the structural variables, only Departmental Discretion is significantly associated with contextual variables: Percentage of Local Funds (-.31), Percentage of Federal Funds (.30), and Percentage Minority (.32).

The multivariate relationship between each of the technological and structural variables and the set of nine contextual variables was examined by means of step-wise multiple regression analysis. No significant associations were revealed.

TABLE 13

MEANS AND
STANDARD DEVIATIONS: VARIABLES OF ORGANIZATIONAL CONTEXT

Variable	Mean	Standard Deviation
Number of High Schools in District	2.568	2.26
District Enrollment	14,252.297	14,337.445
District Per Pupil Expenditure	722.298	67.456
Percentage Expenditure, State Funds	66.378	4.641
Percentage Expenditure, Federal Funds	14.878	6.290
Percentage Expenditure, Local Funds	18.743	6.907
School Enrollment	1,407.541	319.380
Percentage of Minority	33.400	17.010
Age of School	15.000	12.570

TABLE 14

CORRELATIONS AMONG VARIABLES OF TECHNOLOGY, STRUCTURE, AND ORGANIZATIONAL CONTEXT

(N = 37)

	TC	LE	VE	DD	DP	HS	DE	PE	SF	FF	LF	SE	PM	AS
TC	1.00	.38	.45	.25	.37	-.12	-.11	.07	-.03	-.15	.15	-.19	.07	-.26
LE		1.00	.64	.09	-.06	.02	-.06	-.16	.14	-.12	.02	-.04	-.21	-.17
VE			1.00	..07	.14	.16	.12	.03	-.08	-.05	.10	-.24	-.10	-.12
DD				1.00	.15	-.07	-.14	-.03	.06	.30	-.31	.03	.32	-.26
DP					1.00	.17	.17	.15	-.18	-.14	.25	-.20	.01	.15
HS						1.00	.85	-.03	-.14	-.12	.20	.16	-.39	.12
DE							1.00	.17	-.29	-.23	.40	.43	-.26	.15
PE								1.00	-.86	.25	.35	.17	.61	.22
SF									1.00	-.23	-.46	-.19	-.43	-.23
FF										1.00	-.76	-.07	.51	-.22
LF											1.00	.19	-.17	.35
SE												1.00	.01	.30
PM													1.00	-.20
AS														1.00

$r \geq .27$, $p \leq .05$
$r \geq .38$, $p \leq .01$

Technological and Structural Variables:
TC : Technical Complexity
LE : Lateral Exchange
VE : Vertical Exchange
DD : Departmental Discretion
DP : Departmental Power

Contextual Variables:
HS : Number high schools in district
DE : District enrollment
PE : District per pupil Expenditure
SF : Percentage State Funds
FF : Percentage Federal Funds
LF : Percentage Local Funds
SE : School enrollment
PM : Percentage Minority
AS : Age of school

42.

Additional Findings

Technical Complexity and Perceptions of Effectiveness

Product-moment correlations presented in Table 15 indicate only two statistically significant associations between Technical Complexity and variables of organizational effectiveness: with Production Emphasis (.29) among the Organizational Climate variables and with satisfaction with Supervision (.33) among the Satisfaction variables.

Step-wise multiple regression analysis revealed no association between Technical Complexity and the multivariate measures of organizational effectiveness beyond that indicated by the univariate associations.

Structure and Perception of Effectiveness

Correlations presented in Table 16 reveal a number of statistically significant correlations, as well as a number of correlations approaching significance, between structural variables and effectiveness measures. The major portion of these associations are found to exist between the two communications variables and the effectiveness variables. Examination of the multivariate associations between structural variables and effectiveness measures produced the following findings:

Lateral Exchange and Organizational Climate

Step-wise multiple regression analysis indicated that Lateral Exchange was associated ($p < .05$) with a set of six of the eight OCDQ variables: Disengagement, Consideration, Intimacy, Production Emphasis, Aloffness, and Esprit. The multiple correlation for this association was .608, and F value 2.95 (df 6,39). However, as indicated in Table 17, the major portion of shared variance was contributed by two variables: Disengagement and Consideration. The negative correlation with Disengagement and the positive association with Consideration are the two strongest univariate

TABLE 15

CORRELATIONS BETWEEN TECHNICAL COMPLEXITY AND VARIABLES OF ORGANIZATIONAL EFFECTIVENESS

(N = 37)

Variable	Product-Moment Correlation
Organizational Climate	
Disengagement	-.14
Hindrance	.08
Esprit	.24
Intimacy	-.22
Aloffness	.13
Production Emphasis	.29
Thrust	.01
Consideration	.19
Classroom Environment	
Involvement	.19
Affiliation	.18
Teacher Support	.08
Task Orientation	-.03
Competition	-.16
Order and Organization	.02
Rule Clarity	.05
Teacher Control	.09
Innovation	.14
Satisfaction	
With Work	.14
With Supervision	.33
With Co-Workers	.20

$r \geq .27$, $p \leq .05$

TABLE 16

CORRELATION BETWEEN VARIABLES OF STRUCTURE
AND VARIABLES OF ORGANIZATIONAL EFFECTIVENESS

(N = 37)

Variable	Lateral Exchange	Vertical Exchange	Dept. Discretion	Dept. Power
Organizational Climate				
Disengagement	-.48	-.43	.03	.19
Hindrance	-.19	-.04	14	.14
Esprit	.28	.16	.07	.29
Intimacy	.15	-.13	.09	-.20
Aloofness	.21	-.34	.29	.38
Production Emphasis	-.24	-.23	-.31	-.18
Thrust	.26	.45	-.13	.05
Consideration	.44	.50	.01	.01
Classroom Environment				
Involvement	.05	-.02	-.19	.02
Affiliation	.34	.37	-.03	.04
Teacher Support	-.06	.14	-.27	.15
Task Orientation	-.26	-.22	.14	.18
Competition	.10	-.11	.04	-.04
Order and Organization	-.17	-.10	.29	-.09
Rule Clarity	.06	-.05	.13	.21
Teacher Control	-.05	.06	.18	.01
Innovation	.48	.40	.05	-.03
Satisfaction				
With Work	.26	.51	.19	.18
With Supervision	.33	.54	.13	.19
With Co-Workers	.63	.54	.03	.22

$r \geq .27$, $p \leq .05$
$r \geq .38$, $p \leq .01$

relationships revealed in Table 16.

TABLE 17

STEP-WISE MULTIPLE REGRESSION: LATERAL EXCHANGE AND ORGANIZATIONAL CLIMATE

(N = 37)	
Multiple Correlation Coefficient:	.576
F statistic, df (2,34)	8.472
$p < .01$	

Variable	F,df(1,34)	P
Disengagement	6.94	.05
Consideration	5.10	.05

Lateral Exchange and Classroom Environment

Step-wise multiple regression analysis revealed a significant multivariate association ($p < .05$) between Lateral Exchange and seven of the nine dimensions of Classroom Environment: Innovation, Affiliation, Teacher Support, Task Orientation, Rule Clarity, Involvement, and Competition. The multiple correlation coefficient for this relationship was .606; the associated F value was 2.402, df (7,29).

Table 18 indicates that the major contributors to this association are made by four of the seven variables. The major contributor, Innovation, was revealed in Table 16 to manifest a positive univariate association - the strongest indicated in that table. The second strongest contribution to the multivariate set, however, is made by Teacher Support, which was shown in Table 13 to have a weak negative relationship with Lateral Exchange. The third strongest contribution derives from the positive association with Affiliation, while the fourth variable in the

set, Task Orientation, is negatively associated with Lateral Exchange. Although the last three variables entered in the equation are shown by univariate F values to be non-signigicant, they are included in the set because of their effects of increasing the strength of the multivariate relationship.

TABLE 18

STEP-WISE MULTIPLE REGRESSION: LATERAL EXCHANGE AND CLASSROOM ENVIRONMENT

(N = 37))

Multiple Correlation Coefficient:	0.593
F statistic, df (4,32)	4.334
$p < .01$	

Variable	F,df (1,32)	P
Innovation	5.695	.05
Teacher Support	3.653	n.s.
Affiliation	3.043	n.s.
Task Orientation	1.952	n.s.

Lateral Exchange and Satisfaction

As indicated in Table 16, Lateral Exchange is most strongly associated with Satisfaction with co-workers ($p < .01$). The relationship with Satisfaction with Supervision is statistically significant ($p < .05$), while the correlation with Satisfaction with work (.26) approaches statistical significance.

As indicated in Table 19, step-wise multiple regression indicates a multivariate relationship between Lateral Exchange and the set of three variables for satisfaction, but almost all of the relationship can be accounted for by the first variable entered in the equation: Satisfaction

with co-workers. This effect may be explained by the strength of the univariate correlations among the three satisfaction variables, which are shown in Table 12 to be statistically significant in each instance.

TABLE 19

STEP-WISE MULTIPLE REGRESSION:
LATERAL EXCHANGE AND JOB SATISFACTION

(N = 37)	
Multiple R:	.643
F statistic, df (3,33)	7.767
$p < .01$	

Variable	F, df (1,33)	P
Satisfaction with Co-Workers	15.869	.01
Satisfaction with Supervision	.980	n.s.
Satisfaction with Work	.010	n.s.

Vertical Exchange and Organizational Climate

Vertical Exchange is shown in Table 16 to be negatively related at statistically significant levels with Disengagement and Aloofness and positively related to Consideration and Trust.

Multiple regression analysis revealed Vertical Exchange to be significantly related ($p < .01$) with a set of five of the eight OCDQ variables: Consideration, Hindrance, Thrust, Disengagement, and Aloofness. The multiple correlation coefficient for this set was .674, and the F value was 5.182, df (5,31).

Table 20 shows that virtually all of the multivariate relationship can be accounted for by four variables: The same four variables shown in Table 16 to manifest significant univariate relationships.

TABLE 20

STEP-WISE MULTIPLE REGRESSION: VERTICAL EXCHANGE AND ORGANIZATIONAL CLIMATE

(N = 37)

Multiple R: .6743
F statistic, df (4,32) 6.670
$p < .01$

Variable	F,df(1,32)	P
Consideration	5.494	.05
Aloofness	5.285	.05
Thrust	4.694	.05
Disengagement	3.835	n.s.

Vertical Exchange and Classroom Environment

Table 16 shows Vertical Exchange to be positively associated with two variables of Classroom Environment: Affiliation ($p < .05$) and Innovation ($p < .01$).

Multiple regression analysis found a signifigant multiple correlation ($p < .05$) between Vertical Exchange and six of the nine Classroom Environment variables, but that relationship was attributable to the strength of the univariate relationships with Innovation and Affiliation.

Vertical Exchange and Job Satisfaction

Vertical Exchange is shown in Table 16 to be strongly associated ($p < .01$) with each of the three satisfaction variables. As shown in Table 21, step-wise multiple regression indicated a strong multivariate relationship between Ver ical Exchange and the set of satisfaction vari-

ables. Although the univariate F reported for Satisfaction with Co-Workers, the third variable to enter the equation, is shown to be non-significant, that variate can be included in the set because of its effect of raising the multiple correlation from .662 to .701; again, the inter-relationships among the three Satisfaction variables appeared to depress the contribution of the third variable entered.

TABLE 21

STEP-WISE MULTIPLE REGRESSION:
VERTICAL EXCHANGE AND JOB SATISFACTION

(N = 37)

Multiple R:	.701
F statistic, df (3,33)	10.598
$p < .01$	

Variable	F,df(1,33)	P
Satisfaction with Supervision	5.988	.05
Satisfaction with Co-Workers	5.840	.05
Satisfaction with Work	3.369	n.s.

Departmental Discretion and Organizational Climate

In Table 16, Departmental Discretion is shown positively associated with aloofness ($p < .05$) and negatively related to Production Emphasis ($p < .05$). Step-wise multiple regression, as shown in Table 22, revealed a multivariate set comprised of three climate variables, the two listed above and Hindrance. Although the univariate F value for Hindrance, the third variable entered in the equation, is shown to be non-significant, that variable is included in the set because of its effects of raising the multiple correlation from .432 to .473, and of increasing the univariate

F value for the other two variables.

TABLE 22

STEP-WISE MULTIPLE REGRESSION: DEPARTMENTAL DISCRETION AND ORGANIZATIONAL CLIMATE

(N = 37)		
Multiple R;		.473
F statistic, df (3,33)		3.172
$p < .05$		
Variable	**F,df(1,33)**	**P**
Production Emphasis	4.946	.05
Aloofness	4.300	.05
Hindrance	1.578	n.s.

Departmental Discretion and Classroom Environment

Correlations presented in Table 16 show Departmental Discretion to be positively associated with Order and Organization ($p < .05$) and negatively associated with Teacher Support ($p < .05$). Step-wise multiple regression revealed no multivariate relationship.

Departmental Discretion and Job Satisfaction

No statistically significant univariate relationships between Departmental Discretion and the satisfaction variables are shown in Table 16. Similarly, multivariate analysis revealed no significant association.

Departmental Power and Organizational Climate

Figures presented in Table 16 show Departmental Power to be related positively to Aloofness ($p < .01$) and Esprit ($p < .05$). Multiple regression analysis, as shown in Table 23, revealed a multivariate set of three climate

variables: Aloofness, Esprit, and Consideration. Of the three, only Aloofness is associated with a univariate F of a statistically significant magnitude. However, the latter two can be included in the set because of the effects their entry exerted upon the multiple correlation coefficient and upon the univariate F value associated with Esprit.

TABLE 23

STEP-WISE MULTIPLE REGRESSION: DEPARTMENTAL POWER AND ORGANIZATIONAL CLIMATE

(N = 37)

Multiple R:	.510
F statistic, df (3,33)	3.864
$p < .05$	

Variable	F,df(1,33)	P
Aloofness	7.945	.01
Esprit	2.925	n.s.
Consideration	1.997	n.s.

Departmental Power and Classroom Environment

Departmental Power is shown in Table 16 to be associated at a statistically significant level with only one Classroom Environment Variable, Rule Clarity ($p < .05$). As indicated in Table 24, however, stepwise multiple regression indicated Departmental Power to be associated with multivariate set comprised of Rule Clarity, Order and Organization, Task Orientation, and Teacher Support. Of the four variables, only one, Order and Organization, is shown by the correlation in Table 13 to be negatively associated with Departmental Power. Although the last two entries, Task Orientation and Teacher Support, are associated with non-significant

univariate F values, they are included in the set because of the effects of the entry upon the significance of the multivariate relationship.

TABLE 24

STEP-WISE MULTIPLE REGRESSION: DEPARTMENTAL POWER AND CLASSROOM ENVIRONMENT

(N = 37)

Multiple R:	.537
F statistic, df (4,32)	3.254
$p < .05$	

Variable	F,df(1,32)	P
Rule Clarity	7.764	.01
Order and Organization	4.153	.05
Task Orientation	4.057	n.s.
Teacher Support	3.965	n.s.

Departmental Power and Job Satisfaction

No statistically significant univariate relationships between Departmental Power and the variable of job satisfaction are shown in Table 13. Similarly, step-wise multiple regression revealed no significant multivariate relation.

IV
SUMMARY AND CONCLUSION

Summary

This study sought to determine whether the level of formal effort to accommodate pupil variability within a high school English department was associated with the patterns of control and communication within that department. Additionally, the question of whether that technological-structural association was related to teacher perceptions of effectiveness was considered.

In summary, the major research questions and the findings of the study were as follows:

Research Question I:

Are there relationships among the four structural variables of Departmental Discretion, Departmental Power, Lateral Exchange, and Vertical Exchange?

Product-moment correlations revealed that the amounts of vertical and lateral exchange reported by department members were closely associated in a positive fashion. However, no relationship was discovered between the communications variables and either of the two measures of departmental control. Moreover, no significant association was revealed between the two control variables, Departmental Discretion and Departmental Power.

Research Question II:

Are there relationships between Technical Complexity and the structural variables of Departmental Discretion, Department Power, Lateral Exchange, and Vertical Exchange?

The findings support the hypothesis of technological-structural interdependence which provided as basis for this study. At the univariate level, Technical Complexity was found to be positively associated at levels of statistical significance with three of the four variables - Lateral Exchange, Vertical Exchange, and Departmental Power - and to be positively related at a level approaching statistical significance to Departmental Discretion. A multivariate association was found between Technical Complexity and the set of four structural variables, with the major contributors being Vertical Exchange and Departmental Power.

Research Question III:

Is there a relationship between Technological-Structural Consonance and teacher perceptions of effectiveness?

Findings related to this question did not provide a conclusive answer. Of the twelve step-wise multiple regression procedures examining the relationship of each of the four technological-structural variables with each of the three sets of effectiveness measures, three statistically significant multivariate associations were found: (1) Technology-Vertical Exchange Consonance was shown to be related to a set of four Organizational Climate variables; (2) Technology-Vertical Exchange Consonance was shown to be related to a set of two Classroom Environment subscales; and (3) Technology-Departmental Discretion Consonance was found to be related to a set of five Classroom Environment Variables.

In addition, Total Consonance was shown to be related to amultivariate set of four Classroom Environment Variables.

The theoretical basis for the study suggested that Technological-structural congruence would be associated with effectiveness. No judgment with respect to that proposition is possible with these findings; it can perhaps be said that limited support is indicated for the hypothesis that technological-structural congruence is related to the organizational characteristics examined by the OCDQ and the CES. To the extent that these measures provide qualitative definitions of effectiveness, there are, within these limited findings, hints that technological-structural congruence may be related to features of Organizational Climate and Classroom Environment which bespeak effectiveness.

Technology-Vertical Exchange Consonance is shown to be related to one OCDQ variable - Disengagement, an indicator of "closeness". The direction of that relationship indicates that as technology and structure approach congruence, Disengagement diminishes. Likewise, Technology-Departmental Discretion Consonance is similarly related to Disengagement. Technology-Departmental Power Consonance is related to Consideration in a manner which indicates that this measure of "openness" increases as technology and structure approach congruence. Total Consonance is shown to be related to both Disengagement and Consideration in a direction which indicates technological-structural congruence may be positively related to "openness".

In Table 8, Technology-Vertical Exchange Consonance is shown to be associated with both Involvement and Affiliation in a direction that indicates that these two measures of the social relationships within a class increase as technology and this aspect of structure approach congruence. Similarly, Involvement is shown to increase as Technical Complexity and Departmental Discretion approach congruence.

Research Question IV:

Are the technological and structural variables employed in this study related to the contextual variables employed in this study?

No support was found to suggest that either Technical Complexity or any of the structural variables were related to the set of nine contextual variables employed in this study. Within the matrix of univariate correlations presented in Table 14, only Departmental Discretion is shown to be related to any of the contextual variables; Departmental Discretion apparently increases in measure with the percentage of federal funds within the current expense budget, increases as the percentage of local funds declines, and increases with the increase in the percentage of minority students in the school population. These three contextual features are in turn interrelated.

Additional Findings

Technical Complexity was found to be unrelated to any of the three sets of measures of teacher perception of effectiveness.

Each of the structural variables, on the other hand, was found to be associated with at least one multivariate set of effectiveness measures.

The two communications measures were found to manifest the strongest associations, each being associated with each of the three sets of criterion measures.

Lateral Exchange was related to a set of six OCDQ measures, with the major share of the association attributable to a negative relationship with Disengagement, an indicator of "closeness", and to a positive relationship with Consideration, an indicator of "openness". Lateral Exchange was also associated with a set of four CES variables, the major

contributor being a positive association with Innovation. Lateral Exchange was positively associated with a set of three measures of job satisfaction.

Vertical Exchange was found to be related to a set of five OCDQ variables. This multivariate relationship was attributable to positive relationships with Consideration and Thrust, indicators of "openness", and to negative relationships with Aloofness and Disengagement, indicators of "closedness". Vertical Exchange was also found to be related to a set of four Classroom Environment measures with the strength of the association attributable for the most part to positive associations with Innovation and Affiliation. Likewise, Vertical Exchange was related in a positive manner with the set of three Satisfaction variables.

While the relationship accounting for the multivariate associations between the communications variables and the effectiveness measures appear to be in directions which indicate a positive association between the amounts of task-related exchange and effectiveness, the findings with respect to Departmental Discretion and Departmental Power appear uncertain in this respect.

First of all, the two control measures manifest a weaker association with the three sets of effectiveness measures. Departmental Discretion was found to be related only to the set of Organizational Climate measures, while Departmental Power was found to be related to Organizational Climate and Classroom Environment. No relationship was found between either control variable and the set of job satisfaction measures.

Moreover, the associations which accounted for these multivariate relationships less clearly indicated effectiveness. The relationship between Departmental Discretion and Organizational Climate was attributable to a negative association with Production Emphasis, and indicator of "closedness",

but also to positive associations with Aloofness and Hindrance, both of which also are indicators of "closedness". Similarly, the multivariate association between Departmental Power and Organizational Climate was primarily accounted for by a positive relationship with Aloofness, an indicator of "closedness", but also attributable to a positive relationship with Esprit, presumably the "key" subtest indicating "openness".

The multivariate relation between Departmental Power and Classroom Environment was primarily accounted for by a positive association with Rule Clarity, with a negative association with Order and Organization, a positive relationship with Task Orientation, and a negative relationship with Affiliation contributing to the remaining strength of the relationship. These findings suggest Departmental Power to be associated with teacher emphasis upon establishing and following rules, a perception that students do not behave in an orderly manner, an emphasis on "staying on the subject", and a perception that students do not manifest a high level of friendship. Notably, Departmental Power is found unrelated to Innovation or to the "relationship" dimensions of Involvement and Teacher Support.

CONCLUSION

The major contribution of this study was the verification of a relationship between technology and structure among the English departments comprising the sample. As the extent to which departmental members reported that their school provided formal means for accommodating pupil variability increased, the levels of communication and control reported within that English department also increased. Both the general relationship between technology and structure as well as the direction of that relationship revealed in this study are consistent with the theoretical

bases of the study.

The theoretical foundations of the study also suggest that congruence between technology and structure is a determinant of effectiveness. The present findings cannot be said to confirm or deny this proposition. However, the limited relationships discovered between technological-structural congruence and perceptions of effectiveness suggest that further investigation of the question may be fruitful.

In the design of further inquiry within this area, specific methodological and conceptual limitations of the present study should be considered:

1. More precise, independent measures of departmental control are necessary. The theoretical bases of this study suggest that the four structural variables employed in the study would be inter-related. As a consequence, the first research question was drawn. However, the findings were inconsistent with the theoretical bases and common logic alike.

A plausible explanation of this apparent contradiction may proceed from the limited ability of individual teachers to perceive the exertion of departmental influence upon decision-making. They may more accurately perceive the amount of communication in which they are engaged since acts of exchange are discrete and concrete instances of behavior. Control, on the other hand, may proceed from subtle processes more difficult to discern. Perceiving only that decisions in the conventional school are the domain of administrators, individuals may be unaware of the influence exerted through interaction upon the administrator's ultimate decision.

Unless the formal procedures of the organization provide content for and require specific instances of departmental decision-making, as may be the case in schools employing a more complex technology, the individual may be unable to report accurately the amount of control exerted by a

department. The problem suggested by this explanation appears, therefore, to be one of measurement: a more precise measure of departmental control is required to distinguish between those administrative decisions which in fact are instances of administrative control and those which result from administrative acceptance of subordinate influence.

2. The measures of effectiveness employed in this study may be characterized as global in nature: they are not specific to the teacher's behavior and they do not provide - except in a remote, inferential sense - a measure of productivity.

More specific and independent measures of effectiveness may increase the probability of revealing predicted relationships.

3. The operational definition of technological-structural consonance required several mathematical manipulations -- the weighting procedure which produced the Technical Complexity score, the standardization of technological and structural scores, and subtraction -- which may have compounded any errors originating in the specific measurement instruments. Moreover, the result of these manipulations was a score removed by a considerable distance from the original responses upon which it was based.

A more direct measure of congruence would be preferable. For example, further study could employ an a priori definition of congruence. That is, existing evidence permits the prediction that organizations utilizing complex technologies require structures characterized by high amounts of work group control and communication in order to be effective, and conversely, organizations employing routine technologies may appropriately use structures defined by low amounts of work group control and communication. The question to be considered then is "are the outcomes of schools utilizing similar technologies related to the nature of the work group

structures?" and the method of analysis shifts from a study of variable relationships based on an arithmetic definition of consonance to a comparison of outcomes between groups which are similar in technology but different in structure.

To conclude, the study has produced significant findings with respect to the interdependence of technology and structure. Additionally, findings, while inconclusive, suggest the validity of the notion that technological-structural congruence is related to organizational effectiveness. In the process of conducting the study, insight regarding the nature of the technology-structure relationship has been gained from which more sensitive means of exploring the question may be derived.

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APPENDIX A

PERSONAL DATA

Name: _____

Sex:
___(1) Male
___(2) Female

Race:
___(1) Caucasian
___(2) Negro
___(3) American Indian
___(4) Other

Age: ___

Years experience in teaching: ___

Years at this school ___

Highest academic degree held:
___(1) Bachelor's
___(2) Master's
___(3) "6th Year" or "advanced certificate"
___(4) Doctorate

Number of semester hours beyond highest degree: ___

APPENDIX B

TECHNOLOGY SCALE

Listed below are a number of statements describing instructional practices and resources for instruction. Indicate the extent to which each of these practices and resources are present in your department by circling the appropriate number after each statement. The numbers after each statement have the following meanings:

1. Not present
2. Present to a slight extent
3. Present to a moderate extent
4. Present to a substantial extent
5. Present to a great extent

1. The time schedule permits variability in length of class meetings. 1 2 3 4 5

2.	Scheduling practices permit instruction with large groups, small groups, and in individual conferences.	1 2 3 4 5
3.	Groups are flexible, i.e., may be re-arranged as instructional purposes require.	1 2 3 4 5
4.	Multiple texts are approved and available for use in English courses.	1 2 3 4 5
5.	Books and other printed matter of a variety of kind, reading level, interest level and publication dates are available for individual student use.	1 2 3 4 5
6.	Supplemental books, periodicals, and other printed matter of a variety of kind, reading level, interest level, and publication dates are available for classroom use.	1 2 3 4 5
7.	Audiovisual materials, equipment, and necessary facilities are provided for individual student viewing and listening.	1 2 3 4 5
8.	Audiovisual materials and equipment are available for classroom presentation.	1 2 3 4 5
9.	"Software" (paper, film, videotape, transparencies, etc.) are available for use by teachers in developing teacher-made learning materials	1 2 3 4 5
10.	"Software" (paper, film, videotape, transparencies, etc.) are available for use by students in pursuing individual or group learning projects.	1 2 3 4 5
11.	Movable furniture and equipment permits flexibility in classroom arrangement.	1 2 3 4 5
12.	Program options are available to the student in the form of English electives or "mini-courses".	1 2 3 4 5
13.	There is a formal program of independent study under which students may earn academic credit for independent study performed under the direction of a faculty member.	1 2 3 4 5
14.	Instruction is individualized through self-teaching procedures using such means as programmed learning materials and Learning Activities Packages.	1 2 3 4 5
15.	Cumulative files of individual student's work in English are maintained.	1 2 3 4 5
16.	Teachers are provided time for planning and counseling with students.	1 2 3 4 5
17.	Relevant in-service programs are provided for teachers.	1 2 3 4 5

18. Secretarial and paraprofessional services are available to teachers. 1 2 3 4 5

19. Diagnostic instruments for use in assessing student needs are available. 1 2 3 4 5

20. Remedial reading services are available. 1 2 3 4 5

APPENDIX C

COMMUNICATION QUESTIONNAIRE

The following questionnaire is designed to determine the extent to which the faculty members of an English department exchange certain types of information among themselves and with administrators. There are 52 statements to which you are asked to respond by circling the appropriate number following the statement.

The numbers following each statement have the following meanings:

1. Never
2. Seldom
3. Occasionally
4. Frequently

There may appear to be a high degree of redundance among the items of this questionnaire. However, it is essential to accurate measurement that all these items be present and that you respond to each one independently. Therefore, please consider each item as independent from all others although it may appear to be a repetition of one to which you have already responded.

I. Intra-Department Communication

Indicate the extent to which you engage in the following types of exchange with other members of your department.

1. I make suggestions to other teachers about ways to improve instructional methods. 1 2 3 4

2. Other teachers ask me about trends in instruction. 1 2 3 4

3. Other teachers ask my opinion about use of time and facilities for instruction. 1 2 3 4

4. From my discussions with other teachers, I gain subject matter knowledge that is helpful to me in teaching. 1 2 3 4

5. I ask other teachers for suggestions for improving my instructional methods. 1 2 3 4

6. Other teachers suggest to me ways of accomplishing the objectives of my courses. 1 2 3 4

7. Other teachers ask me for advice when they are selecting materials for instruction. 1 2 3 4

8. I make suggestions to other teachers about ways for improving their overall effectiveness. 1 2 3 4

9. I discuss with other teachers the weaknesses and strengths of the instructional practices in our school. 1 2 3 4

10. Other teachers ask me for specific information because of my subject matter knowledge. 1 2 3 4

11. I engage in discussions with other teachers because of our mutual interest in and knowledge of a particular subject area. 1 2 3 4

12. I ask other teachers for suggestions for improving my overall teaching effectiveness. 1 2 3 4

13. I discuss with other teachers the most effective ways to use the financial resources which we have available. 1 2 3 4

14. Ideas provided by other teachers are helpful to me when I am deciding what supplementary instructional materials to order. 1 2 3 4

15. Other teachers ask me for suggestions for improving their instructional methods. 1 2 3 4

16. When I am considering ways of organizing instructional time, I seek suggestions from other teachers. 1 2 3 4

17. I offer information about subject matter to other teachers. 1 2 3 4

18. I offer suggestions to teachers about how we can best use the money which is available to us for instructional materials. 1 2 3 4

19. I discuss with other teachers how best to use time and facilities which are available for instruction. 1 2 3 4

20. When I run across new ideas about teaching, I share them with other teachers. 1 2 3 4

21. I seek information from other teachers about recent trends in instruction in my subject. 1 2 3 4

22. I learn about new methods of instruction from other teachers. 1 2 3 4

23. Other teachers seek suggestions from me for improving their overall teaching competence. 1 2 3 4

24. I ask other teachers questions about subject matter. 1 2 3 4

25. Other teachers offer suggestions to me about uses of financial resources for instruction. 1 2 3 4

26. I offer to other teachers my opinions about the use of time and facilities for instruction. 1 2 3 4

II. Communication with Administrators

Indicate the extent to which you engage in the following types of exchange with administrators.

27. I inform administrators of the need for improvement of instructional practice in my area. 1 2 3 4

28. Administrators ask me about ways to utilize the time, facilities, and personnel which are available for instruction. 1 2 3 4

29. I provide administrators with information, based upon my sugject matter knowledge, to enable them to understand better the objectives of instruction in my area.

30. I offer to administrators my opinion of another teacher's competence. 1 2 3 4

31. I discuss with administrators the weaknesses and needs for improvement in current instructional practice. 1 2 3 4

32. Administrators inform me of their opinion of my competence. 1 2 3 4

33. Administrators ask me for information about ways to help new teachers develop instructional competence in my area. 1 2 3 4

34. Administrators ask me to provide them with information about recent developments in instructional practice in my area. 1 2 3 4

35. Administrators ask me for my opinion of another teacher's competence. 1 2 3 4

36. Administrators ask me questions about the content of the courses that I teach in order that they may better understand the objectives and problems of instruction in my area. 1 2 3 4

37. I discuss with administrators ways to utilize best the personnel, time, and facilities available for instruction in my area. 1 2 3 4

38. Administrators inform me of the amount of money at my disposal for instructional use. 1 2 3 4

39. I discuss recent development in instructional methods with administrators. 1 2 3 4

40. Administrators provide me with information about the most effective use of time, facilities, and personnel available for instruction in my area. 1 2 3 4

41. Administrators direct information to me about recent developments in instruction in my subject. 1 2 3 4

42. Administrators ask me for suggestions for the improvement of instruction in my area. 1 2 3 4

43. I discuss the content of my subject area with administrators. 1 2 3 4

44. Administrators ask me for suggestions about the most effective use of financial resources in my area. 1 2 3 4

45. I discuss the qualities of good teaching with administrators. 1 2 3 4

46. I tell administrators about effective ways of utilizing the time, facilities, and personnel available for instruction in my area. 1 2 3 4

47. I ask administrators about ways for utilizing effectively the financial resources available to me for instruction. 1 2 3 4

48. I tell administrators about the amount of financial support which is needed for an effective instructional program in my area. 1 2 3 4

49. I ask administrators for information about recent trends in instruction in my area. 1 2 3 4

50. I tell administrators about recent developments in instructional practice in my area. 1 2 3 4

51. I ask administrators for suggestions about ways to utilize the time and facilities available to me for instruction. 1 2 3 4

52. I discuss with administrators ways to get maximum use of financial resources which are available for instruction in my area. 1 2 3 4

APPENDIX D

CONTROL SCALE

I. Instructions

Listed in Column A below and on the next page are a series of categories in which individuals and groups may exercise decision making control. The individuals and groups who might influence these decisions within the School are listed at the heads of columns B, C, and D.

You are asked to indicate the proportion of control that each individual or group exerts in each decision category in the following manner:

> Assume that the total amount of control exerted within the school in each category is represented by 10 and apportion that number among the three spaces on each row. The total of numbers assigned to each row will equal 10.

The term "department" refers to the English department. Values assigned to that group should reflect the amount of influence exerted by the department acting as a department by deliberating and defining group decisions.

Example:

A Category of Decision	B Individual Teacher	C English Dept.	D School Administrative Staff
1. Assignment of teachers to extra-curricular activities	1	2	7

Note: Total of numbers in example row equals 10.

A Category of Decision	Individual Teacher	English Dept.	School Administrative Staff
1. Determination of what is to be taught in courses of instruction	___	___	___
2. Selection of instructional materials	___	___	___
3. Determination of teaching methods	___	___	___
4. Grouping of pupils for instruction	___	___	___

A Category of Decision	B Individual Teacher	C English Dept.	D School Administrative Staff
5. Definition of criteria for evaluating instructional programs	___	___	___
6. Definition of procedures for evaluating instructional programs	___	___	___
7. Definition of criteria for evaluating pupil performance	___	___	___
8. Definition of procedures for evaluating pupil performance	___	___	___
9. Definition of goals for instructional program	___	___	___
10. Determination of specific courses to be assigned to individual teachers	___	___	___
11. Determination of staffing needs (e.g., the number and type of persons needed in the English program)	___	___	___
12. Determination of criteria for selection of new staff members	___	___	___
13. Selection of new staff members	___	___	___
14. Determination of criteria for evaluating staff members	___	___	___
15. Determination of method for evaluating staff members	___	___	___
16. Evaluation of staff members	___	___	___
17. Distribution within school of money available to instructional resources	___	___	___
18. Determination of the amount of time (e.g., the optimum number and length of class meetings) required for a particular English course	___	___	___
19. Development of school's daily time schedule for instruction	___	___	___

A Category of Decision	B Individual Teacher	C English Dept.	D School Administrative Staff
20. Determination of space needs for instructional programs	____	____	____
21. Assignment of work stations to individual teachers	____	____	____
22. Decisions regarding modification, equipping, and furnishing instructional facilities	____	____	____

APPENDIX E

ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE

The items in this questionnaire describe behaviors or conditions that occur within a school. Please indicate to what extent each of these conditions characterize your school by circling the appropriate number following each statement. The numbers after each statement have the following meanings:

1. Rarely occurs
2. Sometimes occurs
3. Often occurs
4. Very frequently occurs

Do not evaluate the items in terms of "good" or "bad" behavior, but read each item carefully and respond in terms of how well the statement describes your school.

Please respond to every item.

1.	Teachers' closest friends are other faculty members at this school.	1 2 3 4
2.	The mannerisms of teachers at this school are annoying.	1 2 3 4
3.	Teachers spend time after school with students who have individual problems.	1 2 3 4
4.	Instructions for the operation of teaching aids are available.	1 2 3 4
5.	Teachers invite other faculty to visit them at home.	1 2 3 4
6.	There is a minority group of teachers who always oppose the majority.	1 2 3 4

7.	Extra books are available for classroom use.	1 2 3 4
8.	Sufficient time is given to prepare administrative reports.	1 2 3 4
9.	Teachers know the family background of other faculty ,e,bers.	1 2 3 4
10.	Teachers exert group pressure on non-conforming faculty members.	1 2 3 4
11.	In faculty meetings, there is a feeling of "let's get things done."	1 2 3 4
12.	Administrative paper work is burdensome at this school.	1 2 3 4
13.	Teachers talk about their personal life to other faculty members.	1 2 3 4
14.	Teachers seek special favors from the principal.	1 2 3 4
15.	School supplies are readily available for use in class work.	1 2 3 4
16.	Student progress reports require too much work.	1 2 3 4
17.	Teachers have fun socializing together during school time.	1 2 3 4
18.	Teachers interrupt other faculty members who are talking in staff meetings.	1 2 3 4
19.	Most of the teachers here accept the faults of their colleagues.	1 2 3 4
20.	Teachers have too many committee requirements.	1 2 3 4
21.	There is considerable laughter when teachers gather informally.	1 2 3 4
22.	Teachers ask nonsensical questions in faculty meetings.	1 2 3 4
23.	Custodial service is available when needed.	1 2 3 4
24.	Routine duties interfer with the job of teaching.	1 2 3 4
25.	Teachers prepare administrative reports by themselves.	1 2 3 4
26.	Teachers ramble when they talk in faculty meetings.	1 2 3 4
27.	Teachers at this school show much school spirit.	1 2 3 4
28.	The principal goes out of his way to help teachers.	1 2 3 4

29.	The principal helps teachers solve personal problems.	1 2 3 4
30.	Teachers at this school stay by themselves.	1 2 3 4
31.	The teachers accomplish their work with great vim, vigor, and pleasure.	1 2 3 4
32.	The principal sets an example by working hard himself.	1 2 3 4
33.	The principal does personal favors for teachers.	1 2 3 4
34.	Teachers eat lunch by themselves in their own classrooms.	1 2 3 4
35.	The morale of the teachers is high.	1 2 3 4
36.	The principal uses constructive criticism.	1 2 3 4
37.	The principal stays after school to help teachers finish their work.	1 2 3 4
38.	Teachers socialize together in small select groups.	1 2 3 4
39.	The principal makes all class-scheduling decisions.	1 2 3 4
40.	Teachers are contacted by the principal each day.	1 2 3 4
41.	The principal is well prepared when he speaks at school functions.	1 2 3 4
42.	The principal helps staff members settle minor differences.	1 2 3 4
43.	The principal schedules the work for the teachers.	1 2 3 4
44.	Teachers leave the grounds during the school day.	1 2 3 4
45.	The principal criticizes a specific act rather than a staff member.	1 2 3 4
46.	Teachers help select which courses will be taught.	1 2 3 4
47.	The principal corrects teachers' mistakes.	1 2 3 4
48.	The principal talks a great deal.	1 2 3 4
49.	The principal explains his reasons for criticism to teachers.	1 2 3 4
50.	The principal tries to get better salaries for teachers.	1 2 3 4
51.	Extra duty for teachers is posted conspicuously.	1 2 3 4
52.	The rules set by the principal are never questioned.	1 2 3 4

53.	The principal looks out for the personal welfare of teachers.	1	2	3	4
54.	School secretarial service is available for teachers' use.	1	2	3	4
55.	The principal runs the faculty meeting like a business conference.	1	2	3	4
56.	The principal is in the building before teachers arrive.	1	2	3	4
57.	Teachers work together preparing administrative reports.	1	2	3	4
58.	Faculty meetings are organized according to a tight agenda.	1	2	3	4
59.	Faculty meetings are mainly principal-report meetings.	1	2	3	4
60.	The principal tells teachers of new ideas he has run across.	1	2	3	4
61.	Teachers talk about leaving the school system.	1	2	3	4
62.	The principal checks the subject-matter ability of teachers.	1	2	3	4
63.	The principal is easy to understand.	1	2	3	4
64.	Teachers are informed of the results of a supervisor's visit.	1	2	3	4
65.	Grading practices are standardized at this school.	1	2	3	4
66.	The principal insures that teachers work to their full capacity.	1	2	3	4
67.	Teachers leave the building as soon as possible at day's end.	1	2	3	4
68.	The principal clarifies wrong ideas a teacher may have.	1	2	3	4

APPENDIX F

CLASSROOM ENVIRONMENT SCALE

On the following pages are statements about high school and junior high school classrooms. Think about the English class with which you are meeting at ten o'clock next Wednesday morning. If you do not have an English class scheduled for that time, think about the very next class that you have following that time. With that class in mind, please respond to the statements below in the following manner:

True --Circle the 1 when you think the statement is True or mostly True of this class.

False--Circle the 2 when you think the statement is False or mostly False of this class.

1.	There is a clear set of rules for students to follow.	1	2
2.	Students enjoy working together on projects in this class.	1	2
3.	The teacher takes a personal interest in students.	1	2
4.	Students in this class aren't very interested in getting to know other students.	1	2
5.	Students have very little to say about how class time is spent.	1	2
6.	The teacher thinks up unusual projects for students to do.	1	2
7.	Almost all class time is spent on the lesson for the day.	1	2
8.	The teacher makes a point of sticking to the rules he's made.	1	2
9.	If a student breaks a rule in this class, he's sure to get in trouble.	1	2
10.	Students don't always have to stick to the rules in this class.	1	2
11.	Students are expected to stick to classwork in this class.	1	2
12.	Students are expected to follow set rules in doing their work.	1	2
13.	Some students always try to see who can answer questions first.	1	2
14.	Students can choose where they sit.	1	2
15.	Students enjoy helping each other with homework.	1	2

16.	Very few students take part in class discussions or activities.	1	2
17.	Students put a lot of energy into what they do here.	1	2
18.	Sometimes the teacher embarrasses students for not knowing the right answer.	1	2
19.	A student's grade is lowered if he gets homework in late.	1	2
20.	Students don't have much of a chance to get to know each other in this class.	1	2
21.	We often spend more time discussing outside student activities than class-related material.	1	2
22.	A lot of students "doodle" or pass notes.	1	2
23.	Students get in trouble if they're not in their seats when the class is supposed to start.	1	2
24.	The teacher hardly ever has to tell students to get back in their seats.	1	2
25.	There are very few rules to follow.	1	2
26.	Rules in this class seem to change a lot.	1	2
27.	Students don't do much work in this class.	1	2
28.	Students do the same kind of homework almost every day.	1	2
29.	This teacher "talks down" to students.	1	2
30.	It takes a long time to get to know everybody by his first name in this class.	1	2
31.	Grades are not very important in this class.	1	2
32.	Students in this class get to know each other really well.	1	2
33.	This teacher spends very little time just talking with students.	1	2
34.	New ideas are always being tried out here.	1	2
35.	We usually do as much as we set out to do.	1	2
36.	The teacher explains what will happen if a student breaks a rule.	1	2
37.	The teacher is not very strict.	1	2

38.	The teacher often has to tell students to calm down.	1	2
39.	Assignments are usually clear so everyone knows what to do.	1	2
40.	This is a well-organized class.	1	2
41.	Students are almost always quiet in this class.	1	2
42.	It's easier to get in trouble here than in a lot of other classes.	1	2
43.	Whether or not students can get away with something depends on how the teacher is feeling that day.	1	2
44.	If a student misses class for a couple of days, it takes some effort to catch up.	1	2
45.	What students do in class is very different on different days.	1	2
46.	In this class, students are allowed to make up their own projects.	1	2
47.	The teacher is more like a friend than an authority.	1	2
48.	Students sometimes present something they've worked on to the class.	1	2
49.	Students daydream a lot in this class.	1	2
50.	This class hardly ever starts on time.	1	2
51.	A lot of friendships have been made in this class.	1	2
52.	There are set ways of working on things.	1	2
53.	Students try hard to get the best grade.	1	2
54.	The teacher explains what the rules are.	1	2
55.	The teacher will put up with a good deal.	1	2
56.	There are groups of students who don't get along in class.	1	2
57.	Getting a certain amount of classwork done is very important in this class.	1	2
58.	If students want to talk about something this teacher will find time to do it.	1	2
59.	Some students in this class don't like each other.	1	2
60.	Students have to work for a good grade in this class.	1	2

61.	This teacher wants to know what students themselves want to learn about.	1	2
62.	The teacher will kick a student out of class if he acts up.	1	2
63.	Students don't feel pressured to compete here.	1	2
64.	Activities in this class are clearly and carefully planned.	1	2
65.	This teacher does not trust students.	1	2
66.	Students fool around a lot in this class.	1	2
67.	Students can get in trouble with the teacher for talking when they're not supposed to.	1	2
68.	Students aren't always sure if something is against the rules of not.	1	2
69.	This teacher often takes time our from the lesson plan to talk about other things.	1	2
70.	New and different ways of teaching are not tried very often in this class.		
71.	Students here don;t care about what grades the other students are getting.	1	2
72.	The teacher goes out of his way to help students.	1	2
73.	It's eacy to get a group together for a project.	1	2
74.	Sometimes the class breaks up into groups to compete with each other.	1	2
75.	A lot of students seem to be only half awake during this class.	1	2
76.	Students are often "clock-watching" in this class.	1	2
77.	The teacher likes students to try unusual projects.	1	2
78.	The teacher sticks to classwork and doesn't get sidetracked.	1	2
79.	In the first few weeks the teacher explained the rules about what students could and could not do in this class.	1	2
80.	Students usually pass even if they don't do much.	1	2
81.	Students have to watch what they say in this class.	1	2
82.	This class is often in an uproar.	1	2

83.	Most students in this class really pay attention to what the teacher is saying.	1	2
84.	Students don't compete with each other here.	1	2
85.	The teacher is consistent in dealing with students who break the rules.	1	2
86.	Students don't interrupt the teacher when he's talking.	1	2
87.	When the teacher makes a rule, he means it.	1	2
88.	Students sometimes do extra work on their own in the class.	1	2
89.	Students really enjoy this class.	1	2
90.	This class is more a social hour than a place to learn something.	1	2

APPENDIX G

JOB DESCRIPTION INDEX

Work: Listed below are a number of items that may describe the way a person feels about his work. Please respond to each item by circling the appropriate number after the item. The numbers have the following meanings:

1. This item describes a particular aspect of my work.
2. This item does not describe a particular aspect of my work.
3. Undecided.

1.	Fascinating	1 2 3
2.	Routine	1 2 3
3.	Satisfying	1 2 3
4.	Boring	1 2 3
5.	Good	1 2 3
6.	Creative	1 2 3
7.	Respected	1 2 3
8.	Hot	1 2 3
9.	Pleasant	1 2 3
10.	Useful	1 2 3
11.	Tiresome	1 2 3
12.	Healthful	1 2 3
13.	Challenging	1 2 3
14.	On your feet	1 2 3
15.	Frustrating	1 2 3
16.	Simple	1 2 3
17.	Endless	1 2 3
18.	Gives sense of accomplishment	1 2 3

Supervision: The following items may describe how a person feels about the supervision of his job. Please respond by circling the appropriate number after the item. Again, the meanings of the numbers are:

1. This item describes a particular aspect of the supervisor of my job.

2. This item does not describe a particular aspect of the supervisor of my job.

3. Undecided.

19.	Asks my advice	1 2 3
20.	Hard to please	1 2 3
21.	Impolite	1 2 3
22.	Praises good work	1 2 3
23.	Tactful	1 2 3
24.	Influential	1 2 3
25.	Up-to-date	1 2 3
26.	Doesn't supervise enough	1 2 3
27.	Quick tempered	1 2 3
28.	Tells me where I stand	1 2 3
29.	Annoying	1 2 3
30.	Stubborn	1 2 3
31.	Knows job well	1 2 3
32.	Bad	1 2 3
33.	Intelligent	1 2 3
34.	Leaves me on my own	1 2 3
35.	Lazy	1 2 3
36.	Around when needes	1 2 3

Co-workers: The following items may describe how a person feels about his co-workers. Please respond by circling the appropriate number after the item. The meanings of the numbers are:

1. This item describes an aspect of my co-workers.
2. This does not describe an aspect of my co-workers.
3. Undecided.

37.	Stimulating	1 2 3
38.	Boring	1 2 3
39.	Slow	1 2 3
40.	Ambitious	1 2 3
41.	Stupid	1 2 3
42.	Responsible	1 2 3
43.	Fast	1 2 3
44.	Intelligent	1 2 3
45.	Easy to make enemies	1 2 3
46.	Talk too much	1 2 3
47.	Smart	1 2 3
48.	Lazy	1 2 3
49.	Unpleasant	1 2 3
50.	No privacy	1 2 3
51.	Active	1 2 3
52.	Narrow interests	1 2 3
53.	Loyal	1 2 3
54.	Hard to meet	1 2 3

APPENDIX H

INITIAL LIST OF

INDICATORS OF TECHNICAL COMPLEXITY

Item Number

1. The time schedule permits variability in length of class meetings.

2. Scheduling practices permit instruction with large groups, small groups, and in individual conferences.

3. Groups are "non-graded", i.e., comprised of individuals representing different grade levels.

4. Groups are flexible; i.e., may be re-arranged as instructional purposes require.

5. Multiple texts are approved and available for use in English courses.

6. Books and other printed matter of a variety of kind, reading level, interest level and publication dates are available for individual student use.

7. Supplementary books, periodicals, and other printed matter of a variety of kind, reading level, interest level, and publication dates are available for classroom use.

8. Audiovisual materials and equipment are available for classroom presentation.

9. Audiovisual materials, equipment, and necessary facilities are provided for individual student viewing and listening.

10. "Software" (paper, film, videotape, transparencies, etc.) are available for use by teachers in developing teacher-made learning materials.

11. "Software" (paper, film, videotape, transparencies, etc.) are available for use by students in pursuing individuals or group learning projects.

12. Facilities are available for producing and duplicating learning materials.

Item Number

13. Movable furniture and equipment permit flexibility in classroom arrangement.

14. Space is provided for a departmental resource center.

15. Program options are available to the student in the form of English electives or "mini-courses".

16. There is a formal program of independent study under which students may earn academic credit for independent study performed under the direction of a faculty member.

17. Instruction is individualized through self-teaching procedures using such means as programmed learning materials and Learning Activities Packages.

18. Cumulative files of individual students' work in English are maintained.

19. Field trips related to classroom studies are provided.

20. Community resources for individual and group learning are utilized.

21. Teachers are provided time for planning and counseling with students.

22. Relevent in-service programs are provided for teachers.

23. Secretarial and paraprofessional services are available to teachers.

24. Teacher load (pupil-teacher ratio) is not excessive.

25. Diagnostic instruments for use in assessing student needs are available.

26. Students' personal records are readily accessible to teachers.

27. Counseling staff members work with English teachers in determining pupil needs.

28. Remedial reading services are available.

APPENDIX I

TWENTH WEIGHTED ITEMS COMPRISING THE TECHNICAL COMPLEXITY SCALE

Rank	Indicator	Weight
1	Scheduling practices permit the instruction with large groups, small groups, and in individual conferences.	667
2	Books and other printed matter of a variety of kind, reading level, interest level, and publication dates are available for individual student use.	589
3	Groups are flexible; i.e., may be re-arranged as instructional purposes required.	567
4	Program options are available to the student in the form of English electives or "mini-courses".	556
5	"Software" (paper, film, videotape, transparencies, etc., are available for use by teachers in developing teacher-made learning materials.	511
6	Teachers are provided with time for planning and counseling with students.	489
7	Supplementary books, periodicals, and other printed matter of a variety of kind, reading level, interest level, and publication dates are available for classroom use.	478
8	Movable furniture and equipment permits flexibility in classroom arrangement.	444
9	"Software" (paper, film, videotape, transparencies, etc.) are available for use by students in pursuing individual or group learning projects.	422
10	Secretarial and paraprofessional services are available to teachers.	411
11	Audiovisual materials, equipment, and necessary facilities are provided for individual student viewing and listening.	400
12	Remedial reading services are available.	389
13	Multiple texts are approved and available for use in English courses.	378
14	There is a formal program of independent study under which students may earn academic credit for independent study performed under the direction of a faculty member.	367

Rank	Indicator	Weight
15	Diagnostic instruments for use in assessing student needs are available.	356
16.	Instruction is individualized through self-teaching procedures using such means as programmed learning materials and Learning Activities Packages.	311
17.	Cumulative files of individual students' work in English are maintained.	311
18.	Relevent in-service programs are provided for teachers.	267
19	The time schedule permits variability in length of class meetings.	233
20	Audiovisual materials and equipment are available for classroom presentations.	211

APPENDIX J

Organizational Climate Description Questionnaire

Subtests:

Disengagement:	Items 2, 6, 10, 14, 18, 22, 26, 30, 38, 61.
Hindrance:	Items *4, *8, 12, 16, 20, 24.
Esprit:	Items 3, 7, 11, 15, 19, 21, 23, 27, 31, 35.
Intimacy:	Items 1, 5, 9, 13, 17, *25, 57.
Aloofness:	Items 34, 40, 44, 52, *54, 55, 58, 54, *64.
Production Emphasis:	Items 39, 43, 47, 48, 48, 51, 62, 66.
Thrust:	Items 28, 32, 36, 41, 49, 53, 56, 60, 63.
Consideration:	Items 29, 33, 37, 42, 46, 50.

APPENDIX K

CLASSROOM ENVIRONMENT SCALE
SCORING KEY

The following list is the scoring key for the Classroom Environment Scale (CES). An item listed as "true" (+) is scored 1 point if marked "true" by the individual taking the scale, and item listed as "false" (-) is scored 1 point if marked "false". The total subscale score is simply the number of items answered in the scored direction.

INVOLVEMENT

Item Number		
16	-	Very few students take part in class discussions or activities.
17	+	Students put a lot of energy into what they do here.
22	-	A lot of students "doodle" or pass notes.
48	+	Students sometimes present something they've worked on to the class.
49	-	Students daydream a lot in this class.
75	-	A lot of students seem to be only half awake during this class.
76	-	Students are often "clock-watching" in this class.
83	+	Most students in this class really pay attention to what the teacher is saying.
88	+	Students sometimes do extra work on their own in this class.
89	+	Students really enjoy this class.

AFFILIATION

Item Number		
2	+	Students enjoy working together on projects in this class.
4	-	Students in this class aren't very interested in getting to know other students.
15	+	Students enjoy helping each other with homework.
20	-	Students don't have much of a chance to get to know each other in this class.
30	-	It takes a long time to get to know everybody by his first name in this class.
32	+	Students in this class get to know each other really well.
51	+	A lot of friendships have been made in this class.
56	-	There are groups of students who don't get along in class.
59	-	Some students in this class don't like each other.
73	+	It's easy to get a group together for a project.

TEACHER SUPPORT

3	+	The teacher takes a personal interest in students.
18	-	Sometimes the teacher embarrasses students for not knowing the right answer.
29	-	This teacher "talks down" to students.
33	-	This teacher spends very little time just talking with students.
47	+	The teacher is more like a friend than an authority.
58	+	If students want to talk about something this teacher will find time to do it.
61	+	This teacher wants to know what students themselves want to learn about.
65	-	This teacher does not trust students.
72	+	The teacher goes out of his way to help students.
81	-	Students have to watch what they say in this class.

TASK ORIENTATION

Item Number		
7	+	Almost all class time is spent on the lesson for the day.
11	+	Students are expected to stick to classwork in this class.
21	-	We often spend more time discussing outside student activities than class-related material.
27	-	Students don't do much work in this class.
35	+	We usually do as much as we set out to do.
44	+	If a student misses class for a couple of days, it takes some effort to catch up.
57	+	Getting a certain amount of classwork done is very important in this class.
69	-	This teacher often takes time out from the lesson plan to talk about other things.
78	+	The teacher sticks to classwork and doesn't get sidetracked.
90	-	This class is more a social hour than a place to learn something.

COMPETITION

13	+	Some students always try to see who can answer questions first.
19	+	A student's grade is lowered if he gets homework in late.
31	-	Grades are not very important in this class.
53	+	Students try hard to get the best grade.
60	+	Students have to work for a good grade in this class.
63	-	Students don't feel pressured to compete here.
71	-	Students here don't care about what grades the other students are getting.
74	+	Sometimes the class breaks up into groups to compete with each other.
80	-	Students usually pass even if they don't do much.
84	-	Students don't compete with each other here.

ORDER AND ORGANIZATION

Item Number		
24	+	The teacher hardly ever has to tell students to get back in their seats.
38	-	The teacher often has to tell students to calm down.
39	+	Assignments are usually clear so everyone knows what to do.
40	+	This is a well-organized class.
41	+	Students are almost always quiet in this class.
50	-	The class hardly ever starts on time.
64	+	Activities in this class are clearly and carefully planned.
6	-	Students fool around a lot in this class.
82	-	This class is often in an uproar.
86	+	Students don't interrupt the teacher when he's talking.

RULE CLARITY

1	+	There is a clear set of rules for students to follow.
8	+	The teacher makes a point of sticking to the rules he's made.
26	-	Rules in this class seem to change a lot.
36	+	The teacher explains what will happen if a student breaks a rule.
43	-	Whether or not students can get away with something depends on how the teacher is feeling that day.
52	+	There are set ways of working on things.
54	+	The teacher explains what the rules are.
68	-	Students aren't always sure if something is against the rules or not.
79	+	In the first few weeks the teacher explaines the rules about what students could and could not do in this class.
85	+	The teacher is consistent in dealing with students who break the rules.

TEACHER CONTROL

Item Number		
9	+	If a student breaks a rule in this class, he's sure to get in trouble.
10	-	Students don't always have to stick to the rules in this class.
23	+	Students get in trouble if they're not in their seats when the class is supposed to start.
25	-	There are very few rules to follow.
37	-	The teacher is not very strict.
42	+	It's easier to get in trouble here than in a lot of other classes.
55	-	The teacher will put up with a good deal.
62	+	The teacher will kick a student out of class if he acts up.
67	+	Students can get in trouble with the teacher for talking when they're not supposed to.
87	+	When the teacher makes a rule, he means it.

INNOVATION

5	-	Students have very little to say about how class time is spent.
6	+	The teacher thinks up unusual projects for students to do.
12	-	Students are expected to follow set rules in doing their work.
14	+	Students can choose there they sit.
28	-	Students do the same kind of homework almost every day.
34	+	New ideas are always being tried out here.
45	+	What students do in class is very different on different days.
46	+	In this class, students are allowed to make up their own projects.
70	-	New and different ways of teaching are not tried very ofted in this class.
77	+	The teacher likes students to try unusual projects.

APPENDIX L

JOB DESCRIPTION INDEX
SCORING KEY

The response shown beside each item is the one scored in the "satisfied" direction for each scale.

WORK		SUPERVISION	
1	Fascinating	1	Asks my advice
2	Routine	2	Hard to please
1	Satisfying	2	Impolite
2	Boring	1	Praises good work
1	Good	1	Tactful
1	Creative	1	Influential
1	Respected	1	Up-to-date
2	Hot	2	Doesn't supervise enough
1	Pleasant	2	Quick tempered
1	Useful	1	Tells me where I stand
2	Tiresome	2	Annoying
1	Healthful	2	Stubborn
1	Challenging	1	Knows job well
2	On your feet	2	Bad
2	Frustrating	1	Intelligent
2	Simple	1	Leaves me on my own
2	Endless	2	Lazy
1	Gives sense of accomplishment	1	Around when needed

Co-Workers

1	Stimulating
2	Boring
2	Slow
1	Ambitious
2	Stupid
1	Responsible
1	Fast
1	Intelligent
2	East to make enemies
2	Talk too much
1	Smart
2	Lazy
2	Unpleasant
2	No privacy
1	Active
2	Narrow interests
1	Loyal
2	Hard to meet